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DOMESTIC URANIUM MINING INDUSTRY

ORIGINAL

HEARING

BEFORE THE

SUBCOMMITTEE ON
ENERGY CONSERVATION AND POWER

OF THE

COMMITTEE ON
ENERGY AND COMMERCE
HOUSE OF REPRESENTATIVES

NINETY-NINTH CONGRESS

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DOMESTIC URANIUM MINING INDUSTRY

TUESDAY, OCTOBER 8, 1985

House of Representatives,
Committee on Energy and Commerce,
Subcommittee on Energy Conservation and Power,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:50 p.m., in room 2322, Rayburn House Office Building, Hon. Edward J. Markey (chairman) presiding.

Mr. Markey. Good afternoon.

I want to thank all the witnesses for coming here. I also welcome the Members of the Congress and members of the full committee who will be visiting us this afternoon, especially Mr. Richardson, and look forward to hearing his views and the views of the other Members of the Congress who will be testifying today, and other knowledgeable people in the field on the state of the uranium industry which I know is critical to New Mexico, to Mr. Richardson's State, and is of vital interest to many other people in the Congress.

However, it is necessary to note that the viability of the uranium industry is not just vital to New Mexico, or Wyoming, or Utah, or Colorado. It is also very important to the nuclear industry, which needs natural uranium to fuel its plants. And, of course, it must interest the ratepayers of nuclear powerplants who ultimately pay the costs for the utility's uranium purchases; 2 weeks ago, the Energy Information Administration released its annual assessment of the uranium industry. This report etches in great detail an industry which has hit hard times and is going through a painful contraction from its earlier days of overbuilt production capacity.

The Department of Energy report surveyed the industry for 1984, and in a variety of measures—from employment levels, to capital expenditures, to mining activity—portrayed an industry which is suffering through a difficult adjustment. The adjustment being made is moving from the overly optimistic forecasts for nuclear power made in the 1970's to today's sober reality that not one nuclear powerplant has been ordered in 7 years in this country, and foreign supplies of uranium have flooded the domestic market. After reviewing this report, one is left asking whether the industry will be able to make that transition without assistance.

The Secretary of Energy reviewed this report and concluded that the domestic uranium industry was not viable in 1984.

Accompanying this determination was an announcement that the Department would take three steps to assist the industry. The first step would be a modification of DOE's enrichment contracts which would encourage utilities to purchase more uranium.

Second, the Secretary announced that DOE would not use its own stockpile as part of the enrichment program. And, finally, the Secretary directed an interagency group to study whether a formal trade inquiry by the U.S. Trade Representative should be initiated.

In reviewing the determination by the Secretary and the steps announced to help out the industry, several questions about the health of the industry are raised.

How seriously ill is the patient? Is the uranium industry on its deathbed, as the EIA report at least suggests? And if the industry is critically ill, then is the cure provided by DOE enough to make the patient well again? Or is it merely prolonging the agony?

I am not advocating any particular remedy for the ills facing the uranium industry. And I certainly do not favor a cure for one patient which will make the whole rest of the ward sick. But, frankly, I have trouble reconciling the prognosis and the cure announced by DOE. I hope we get a clearer picture today of what DOE has in mind for the future of this industry.

Ironically, DOE may well have contributed to the deteriorating condition of the uranium industry. One of the principal forces buffeting the uranium industry is the enrichment program run by DOE. Frankly, I have several problems with the way this program is managed, and some of these matters directly affect the viability of the uranium industry.

First, let's focus on the new DOE contract for enrichment services. This new standard-form contract contains great flexibility which DOE inserted in order to retain some of its utility customers. However, in a recent U.S. district court decision from Colorado, Judge Jim Carrigan held these contracts to be null and void because the contract was not submitted to Congress. The Atomic Energy Act directs the Secretary to submit to Congress for 45 days' review any change in the criteria under which enrichment services are to be performed.

I find it inexcusable that the Secretary of Energy tried to lock out this Congress from performing its job of reviewing any changes in the criteria set forth in the Atomic Energy Act. I might add that I am heartened by Judge Carrigan's decision. I further find it highly irregular that the Department of Energy is moving forward with its deliveries of uranium, ostensibly under these same contracts recently held null and void. It seems that DOE counsel does not read the decision to be a cease and desist order. I plan on inquiring further into DOE's conduct.

The other area of the enrichment program which concerns me is the pricing structure DOE has adopted for its services. I have serious doubts that this program is being managed with the taxpayer's interest in mind. Instead, the program appears to be run as a Government business would be expected to be run: uneconomically.

DOE adopted a pricing policy which helps it gain market share but fails to recover the costs of the program. This is like the owner who decides to sell all his new cars for $100 below costs. When an assistant asks how the company can afford to sell its car for less than cost, the owner responds, "Yeah, but we'll make up for it in volume."

DOE is trying to make up for it in volume, and the taxpayer is covering the operation. Last year, the General Accounting Office estimated that DOE owes the Treasury approximately $6 billion. It had appeared that the administration was in agreement. In fact, the agreement was so broad that the Senate/administration deficit reduction plan, dated April 15, 1985, included a payback plan. This plan was agreed to by the House and is now part of the first budget resolution.

Following upon this consensus, this committee incorporated the payback plan proposed by the administration in its budget reconciliation language. Now, however, it seems that DOE is walking away from earlier commitments made by this administration. They won't even endorse their own payback plan. It appears that we can cut fuel subsidies for the poor; it seems that we can cut low-income conservation programs; but this Department refuses to cut back on fuel subsidies for nuclear powerplants. Instead, it has recently increased the subsidy by offering further price cuts in enrichment services.

Obviously, there are other factors which affect the viability of the industry, and many of those will be addressed today. One possible remedy for the problems facing the industry is import restrictions. It is often suggested that we must adopt domestic-content requirements for uranium in order to preserve this industry for national security. And if we don't, the argument continues, then our country could again be held hostage to a fuel cutoff, like the Mideast oil embargo.

Let me say that I believe our Nation needs a uranium industry. But I have some trouble accepting the full argument that uranium equals oil, and the Middle East equals Canada, our principal trading partner. The two have similarities, but so do the Mets and the Cardinals, and only one is in the baseball playoffs.

What must be formulated is a rational, domestic energy policy which treats all energy sources equally. If the uranium industry needs assistance, then a policy must be constructed which does not damage our other interests. I look forward to hearing from the witnesses today so they can enlighten us on the proper course this committee should pursue.

I will now recognize other members for any opening statement which they may wish to make.

The gentleman from Utah, Mr. Nielson.

Mr. NIELSON. Before I start, I have a letter from Congressman Dick Cheney and a statement from Congressman McCain, which I would like entered into the record. He cannot be here.

Mr. MARKEY. Without objection, his statement will be included in the record.

Mr. NIELSON. I also have a statement from Governor Bangerter of the State of Utah, who is not able to be here; he was scheduled to be here. I would like to put that in the record as well.

Mr. MARKEY. Without objection, his statement will also be included in the record.

Mr. NIELSON. I have my own statement as well as a summary of the Governor's statement.

I would like to wholeheartedly commend you for holding this hearing on the viability of the domestic uranium industry. It is important for the subcommittee to look into the present condition of the industry and perhaps discover some means to assure a domestic supply of uranium in this country.

As you know, the Atomic Energy Act requires the Department of Energy to maintain a viable domestic uranium industry. Just last week the Secretary of Energy, John Herrington, issued a report concluding that during 1984 the uranium industry in this country was not viable. I concurred with his evaluation. Many of us who have been in close contact with the industry have known that its viability has been questionable for some time.

In addition to declaring the industry nonviable, Secretary Herrington outlined a three-step approach he hoped would assist industry efforts to once again become viable. First, DOE will offer a variable tails option to utilities who purchase 100 percent of their uranium enrichment srvices from the DOE.

Second, the DOE will postpone using its uranium stockpile in its enrichment program for 1 year, making it possible to purchase new supplies of uranium.

Finally, the DOE will ask the Special Trade Representative to examine import practices of foreign producers and make recommendations as to what actions should be taken under U.S. trade laws.

I applaud the Secretary's initial steps. It is crucial to our country's national defense and energy security to maintain a domestic uranium industry. Without a domestic source of uranium it is doubtful that we could obtain the nuclear fuel necessary to operate our nuclear submarines and I am sure that it would have an equally negative impact on other aspects of our national security.

Furthermore, 20 percent of this Nation's electricity is produced by nuclear powerplants. It is a clean, environmentally good source of electricity. If our domestic industry were allowed to die and we were forced to rely on the foreign sources of uranium, there might come a time when we would be unable to purchase uranium for our powerplants and thus be forced to rely on oil imports from other sources.

While he mentions the Mets and the Cards, I think it is true we need both teams. Even the Red Sox are important.

I recently attended a uranium symposium in my district where we discussed the current state of the industry. My district happens to have one of the few operating uranium milling plants in the country. During the symposium, I heard over and over again the concern that the Federal Government was doing nothing to assure the industry's viability. Many of those who attended the symposium felt that one country in particular was involved in trade practices which violated treaties they had signed with the United States. Many felt that unless these unfair trade practices could be stopped the industry would face a rather bleak future.

I hope this subcommittee can work closely with both the uranium industry and the Secretary of Energy to assure that this country will have a domestic source of uranium.

With your permission, I would like to give a summary of Governor Bangerter's statement; I think it is rather important:

First, the problems of our domestic uranium industry are mirrored in Utah as well.

Second, unemployment is widespread in southeastern Utah where Utah's uranium capacity is located.

Third, oversupply of uranium can be traced to forecasts by the Atomic Energy Commission of nuclear industry growth which, eventually, never materialized to the agency's projections.

Fourth, DOE's enrichment program has reduced demand for domestic uranium.

Fifth, due to foreign government subsidies, uranium imports have undercut our domestic industry.

Sixth, domestic uranium industry is necessary for energy independence and national security. The Atomic Energy Act states that the United States should "assure the maintenance of a viable domestic uranium industry." However, DOE has recently annouced that industry is nonviable.

Seventh the United States must limit our dependence on foreign uranium suppliers.

Eighth, Governor Bangerter supports some kind of domestic-content requirement for nuclear fuel; supports Congressmen Lujan and Richardson, who have recommended a requirement in the neighborhood of 75 percent subject to grandfathering existing contracts.

Ninth, Governor Bangerter supports the Uranium Mill Tailings Reclamation Act.

(a) Old AEC contracts did not take into consideration reclamation costs.

(b) Reclamation costs were generally not considered when contracts were negotiated for commercial sales of uranium to utilities.

(c) Some form of utility contribution would be appropriate for financing of reclamation.

Tenth, such a financing mechanism will ensure that reclamation costs are borne by those directly responsible and by those benefiting from uranium products.

Let me compliment Congressmen Lujan and Richardson for their bill and also the other work that they are doing. Also my other neighbors, Congressmen Skeen and Rudd, who border on these and have uranium in their districts.

I thank the chairman.

[Testimony resumes on p. 17.]

[The letter and statements referred to follow:]

DICK CHENEY
WYOMING

Congress of the United States
House of Representatives
WASHINGTON, D.C. 20515

October 8, 1985

The Honorable Edward J. Markey
Chairman
Subcommittee on Energy Conservation and Power
House Committee on Energy and Commerce
Washington, D.C. 20515

Dear Mr. Chairman:

Due to an unavoidable scheduling conflict, I was unable to attend your October 8 subcommittee hearing on the viability of the domestic uranium industry. Consequently, I would be grateful if this letter could be made a part of the hearing record.

First and foremost, I want to express my extreme concern about the deteriorating status of this country's uranium industry. Conditions in my home state of Wyoming, which, along with New Mexico, used to provide most domestic uranium, are indicative of the serious decline of this industry. The most recent issue of the Wyoming Mineral Yearbook, published by Wyoming state government, says:

> "The Wyoming uranium industry mirrors the current slump affecting the entire industry. From 19 operators employing over 5,400 workers in early 1980, the industry has shrunk to four operators employing about 1,200 ...Production is projected to show a significant (further) near-term decline."

Indeed, since that report was published, more operations have closed down in Wyoming and more workers have lost their jobs. Today, there is only one active operation remaining in Wyoming, and, I am told, none in New Mexico.

...continued

Page Two
The Honorable Edward J. Markey
October 8, 1985

I was relieved recently when the Department of Energy finally confirmed what everyone familiar with the uranium scene has known for some time -- that the domestic mining and milling industry is not viable, either literally or within the Atomic Energy Act definition of that term. I hope that this finding will stimulate a prompt and thorough examination of alternatives for revising U.S. government policies and practices so as to encourage the revival of the industry.

As for the Congress, it is my hope we can proceed with the gathering of relevant information, as you are doing by conducting your hearing, and that we can move forward with sensible mill tailings clean-up legislation and such other legislative proposals as may seem indicated as a result of the hearings and research process.

Maintaining a viable uranium mining and milling industry in this country is not only required by the Atomic Energy Act, it is also important to our security. If our own industry goes out of business, we will become dependent on foreign sources and subject to whatever consequences might accompany such a dependency. We should not place ourselves in such a vulnerable position.

I look forward to reviewing the record of your hearing, and hope there can be a mutual effort by your subcommittee and the House Interior Committee, on which I serve, to develop sound legislative proposals to help insure a viable domestic uranium industry.

Best regards,

Dick Cheney
Member of Congress

Statement of the Honorable John McCain
Before the Subcommittee on Energy Conservation and Power, Committee on Energy and Commerce
Hearing on the Viability of the Uranium Industry

Mr. Chairman. U.S. civilian uranium requirements are at an all time high and are growing, yet domestic uranium production is plummeting to the levels that characterized the industry's infancy. This collapse has been disasterously rapid and was totally unforeseen by the Department of Energy or by the Energy Information Administration. As late as December of last year, the DOE was declaring our uranium industry viable and EIA was forecasting stability and growth for domestic producers. But reality can not be ignored for too many years. In the past month, DOE has acknowledged that our uranium industry is non-viable and EIA projects up to a 70% import dependency by the 1990's. DOE's chief response to this situation is a few relatively ambiguous but apparently quite limited changes to its enrichment policies and a request to Trade Represntative Yeutter to study the question of whether to initiate a trade proceeding.

Uranium has long been associated with our national security as a factor contributing to our energy independence. Today, we import nearly the same percentage of oil as we did prior to the oil embargo of 1973. The acid rain problem plagues the development of our coal resources. There are fewer and fewer rivers to dam for hydro power. Growth in renewables has been slower than expected. In short, our country does not appear to have progressed very far down the road of energy security. This hardly seems to be the time to become import-dependent for our nuclear fuel. In fact, it strikes me as foolish, if not downright dangerous, for our nation's long-term interests.

Although I applaud the DOE non-viability decision. I wonder why it took so long. I am further concerned about the effectiveness of the actions DOE has announced. Our goal of energy independence remains a distant vision while our primary governmental response appears to be one study after another. The existing law says DOE "shall assure the maintenance of a viable domestic uranium industry." I question whether the steps recently announced will fulfill that mandate. I also question why DOE is not taking a stronger position against the various unfair foreign trade practices identified as afflicting the international uranium market.

Finally, I believe it is necessary to ensure that waste generated in the uranium cycle is disposed of adequately. I am interested to learn whether DOE will support a sharing in the cost of reclaiming the tailings generated under old Atomic Energy Commission uranium procurement contacts. The intent of these contracts was to cover costs but reclaimation was not even addressed in those days. Now this industry is facing a one to four billion dollar expense, depending on who's numbers you believe, and it seems only fair and equitable for DOE to pick up its share.

Mr. Chairman I believe our country requires a strong U.S. nuclear fuel industry to supply our uranium needs. The electricity, generated by our nuclear power plants is essential for our long-term energy security. Loss of our domestic uranium industry is hardly consistent with our national interest.

Statement of
Governor Bangerter

Hearing Before the Subcommittee on Energy
Conservation and Power, House Committee on Energy
and Commerce
October 8, 1985

Chairman Markey and members of the Subcommittee, I am pleased to provide this statement on behalf of the State of Utah. The topics before the Subcommittee are broad and complex. I shall attempt to be brief and will focus on the condition of our domestic uranium industry, with a particular emphasis on Utah, and what I believe should be done.

1. Uranium Industry Viability

There is no question that the domestic uranium industry is severely depressed. In the words of the Wall Street Journal, the industry, "barely exists now, after a collapse that by industrial standards occurred practically overnight." Employment has gone from 22,000 to only 2,000 or less in a few short years. Only 3 or 4 of the Nations 25 uranium mills are in operation. Output is far below capacity.

This situation is mirrored in Utah. Uranium mining has largely dried up. Unemployment is widespread in southeastern Utah and in the Moab area where Utah's uranium capacity is located.

The next question is what are the causes. I know the causes of this situation are very complex with enough blame to be shared by all concerned; government and industry. However, my testimony address only those factors within government that should and can be corrected in order to ensure the survival of our domestic uranium industry.

First, in the early 1970's the Atomic Energy Commission -- The Department of Energy's predecessor -- forecasted a geometric growth in the nuclear industry. In response, the AEC insisted that nuclear utilities contract well in advance for their uranium enrichment needs. This in turn forced the utilities into the market for long-term supplies of uranium for feed material for AEC's enrichment plants. Although the nuclear industry did expand -- indeed, uranium and enriched uranium requirements are at an all time high and are growing -- the industry did not expand as rapidly as forecasted by AEC. As a result, inventories of both enriched uranium and natural uranium built up. These have a depressing effect on today's uranium market.

Second, DOE's response to the inventory build-up has been to take measures to maintain as much of the government's uranium enrichment business as possible. This is hardly surprising. However, the measures taken by DOE to foster its business have had the effect of drastically reducing demand for domestic uranium. Some experts have estimated that DOE's new

"US" enrichment contract will reduce demand for domestic uranium by around 1 million pounds over the next 10 years -- an amount equivalent to expected U.S. production.

Third, whatever market is left is being captured by foreign imports because of their governments favorable policies and lower production costs due to much richer ores.

Existing U.S. uranium production facilities will not be kept on stand-by forever. State and federal regulation will eventually require reclamation. Moreover, maintaining facilities on stand-by is not a cost-free proposition. The net result of this situation is that unless there is federal action soon, our domestic uranium industry will largely disappear.

This raises the question of whether we should be concerned about the demise of our domestic uranium industry. We believe that the answer is unequivocally "yes."

Our starting point should be existing law and policy. Congress long ago recognized that the domestic uranium industry is important for U.S. energy independence and national security. As a result, Congress adopted a proviso to Section 161(v) of the Atomic Energy Act. The proviso requires the Atomic Energy Commission, now the DOE, to "assure the maintenance of a viable domestic uranium industry." The DOE is evidently concerned that any measures it takes to preserve a uranium industry will hurt its enrichment business. In any event, DOE recently adopted a set of regulations defining a "viable" domestic uranium industry as whatever industry is necessary, after stockpiles are taken into account, to supply incremental uranium demand in the event of unspecified import disruptions. To Secretary Herrington's credit, he forthrightly acknowledged on September 26 that the domestic uranium industry was in fact non-viable, under the agency's definition.

But one can go beyond existing law to justify action on behalf of maintaining a strong domestic uranium industry. In particular, loss of a strong domestic uranium industry should pose a serious concern to U.S. nuclear utilities and to their ratepayers. The United States is now more dependent than ever before on nuclear generated electricity. Yet Canada, South Africa, and other uranium producing countries review and control the prices, terms and conditions of uranium export contracts. They have adopted legislation inhibiting the application of U.S. antitrust law to their uranium market activities. In short, the mechanism is in place for these countries to escalate their prices and to maximize their profits at our expense once we became overly-dependent on their uranium supplies for our essential electricity needs. National self-interest and ratepayer self-interest dictate that we limit our dependence.

(5)

In addition, failure to act is grossly unfair to U.S. producers, their employees, and their families. Although our labor force is productive and our technology is modern and efficient, we cannot compete against the kinds of trade practices employed by our foreign competitors. Canada is a case in point. According to reports published in Nuclear Fuel, the price paid by Canadian utilities for Canadian uranium is roughly three to four times the level at which the Canadians are selling their uranium in the U.S. This kind of price discrimination is commonly referred to as "dumping." In addition, there is evidence that the Canadians, through cash infusions stockpile transfers, and no-interest loans, have given their industry over a billion dollars in subsidies. To top this off, they are allocating their low cost production to the U.S. market, while reserving their high cost production for their own use and for certain other foreign markets. This full employment program for Canada is wrecking havoc on our producers. As Governor of a State directly affected by it, I wish that our Congress and Executive Branch would respond, and respond soon.

The situation calls, quite frankly, for some kind of domestic content requirement for nuclear fuel. Congressmen Richardson and Lujan have suggested a requirement in the neighborhood of 75% subject to grandfathering existing contracts. This seems to me to be fair and reasonable under the circumstances. It will assure ample competition, both between domestic producers and foreign suppliers. At the same time, it will assure the maintenance of a U.S. uranium capability and the energy security which that represents.

2. Uranium Mill Tailings Reclamation Act.

Mr. Chairman, the Subcommittee is also considering legislation providing for the financing of reclamation of existing uranium mill tailings at currently licensed uranium milling sites. Estimates of clean-up costs at these sites range from one to four billion dollars. Approximately 30% of the tailings were generated under old defense contracts with the Atomic Energy Commission. Although the old contracts were basically intended to reimburse for costs, the AEC did not recognize that tailings reclamation would be required and thus did not provide reimbursement for the kind of clean-up activities now anticipated. Equity suggests that the federal government should bear its fair share now. Similarly, the costs associated with reclamation of tailings were not generally recognized when contracts were negotiated for commercial sales of uranium to utilities. This suggests that some form of utility contribution to the clean-up of existing tailings would be appropriate. There are two other good reasons for some kind of equitable financing mechanism. First, as long as uranium producers are faced with these enormous liabilities and no sales to offset them, they will be reluctant to invest in the plant and equipment to meet our future uranium needs, thus exacerbating our dependence on foreign supplies. Second, an equitable financing mechanism will ensure that the costs of reclamation are borne by those who are reponsible for the cost and it will encourage environmentally sound management of the tailings.

The Uranium Mill Tailings Reclamation Act responds to these concerns. It calls on the federal government to bear its fair share of reclamation costs. Similar to the Nuclear Waste Policy Act, it establishes a 0.15 mil/kwh fee on nuclear generated electricity -- about one-seventh the fee for spent nuclear fuel -- to offset an additional 55% of reclamation costs. Uranium producers will pick up the remainder.

Mr. Chairman, I understand that DOE and the utility industry have raised the concern that if DOE does the clean-up, it will cost more. I share this concern. It is obviously in everyone's best interest to run a cost-effective clean-up program. This could be done, I believe, if either the uranium companies ran the program or if the states did so. Given such a modification, Utah is happy to support the legislation.

I appreciate this opportunity to testify, and I hope that our State can work with your Subcommittee in fashioning a program to address our national interests in the uranium supply area. Thank you.

Mr. **Markey**. The gentleman's time has expired. Any other members of the subcommittee? The gentleman from Alabama, Mr. Shelby, is recognized for 5 minutes.

Mr. **Shelby**. Mr. Chairman, first of all I would like to commend you as the chairman of the subcommittee for convening this hearing on a topic that is vital to this country's energy security. I believe this country will be required to expand its electrical production capability. Nuclear power generation should be a major contributor to the new capacity.

I do not understand how this expansion will occur without a secure and an economical domestic supply of uranium that is necessary to fuel a major portion of these current and future plans. Therefore, I believe it is incumbent upon us to fully understand the causes of the precipitious decline in the uranium mining industry in the United States and to determine what action should be taken consistent with the national interest to revive and maintain a sufficient domestic uranium production capability.

I am particularly interested in the allegations of unfair trade practices occurring in the uranium markets which may be inhibiting our companies' abilities to compete for sales. It would appear to me that this industry will remain nonviable as long as foreign markets remain closed and foreign uranium is sold at prices below cost in this country.

Mr. Chairman, I appreciate your time.

Mr. **Markey**. The gentleman's time has expired.

Mr. **Hall**. Mr. Chairman.

Mr. **Markey**. The gentleman from Texas, Mr. Hall, is recognized for 5 minutes for the purpose of making an opening statement.

Mr. **Hall**. Thank you, Mr. Chairman.

Members of the committee, I think I also agree with the gentleman from Alabama that it is very appropriate to hold these hearings on the state of the domestic uranium industry. The industry today is but a shadow of its former self, and the outlook, as we view it today, is not very bright. In the last 4 years, employment in the domestic uranium industry has decreased, I am told, about 90 percent and while electric utilities with nuclear generating capacity and their customers may be benefiting ever so slightly in the short run, through the purchase of foreign supplies at bargain-basement prices, I think it is important to look beyond price alone, and ask questions about other factors for the longer term.

And, looking from both sides of the podium, some of the questions would be, first, how important is it to have a domestic uranium industry.

Second, some ask why can't we rely on imports, especially since the majority of foreign source uranium is coming from our friends north of the border, the Canadians.

Third, what are the national security implications of reliance on foreign sources. How are we going to clean up the mill tailings, especially if there is no viable domestic industry; and finally, how big does the domestic industry need to be; and what characteristics should it have in order to be viable.

These are all tough questions, and I hope the witnesses before us today—and I think we have a very unusually high caliber of witnesses today—will provide some of the answers for us and help the subcommittee sort out what is actually in the national interest.

We have seen many of these issues before in other contexts. For example, we found that the importation of foreign crude oil, which affects my district in my State and other energy-producing States, and the country as well, we found that to be detrimental to national security if import levels get too high. With telecommunications equipment, oil country tubular goods, and refined petroleum products, to name a few, we have heard strong evidence that our trading partners are not playing with the same rules as we are with instances of products being dumped on our market at costs below what it costs to produce and sell the goods at home.

Chemical manufacturers and industrial users are facing multimillion dollar cleanup programs, which this committee is dealing with in the Superfund legislation, so in this respect, the uranium industry seems to have problems in common with many other industries. I believe that a viable domestic uranium industry is vital to this country's military strength and our economic health.

With 127 nuclear power reactors operating or under construction today, and expected to provide up to 40 percent of the electric requirements in some regions of the country, I think it would be very shortsighted in the extreme if we decided to abandon this part of the nuclear industry and depend totally on foreign sources.

Aside from the national security argument, there are some real nuts-and-bolts reasons why this industry needs to remain viable, and one of them is jobs. Although there were several mines operating in the southern part of my State until recently, none of them are operating today. These mines are located in one of the most economically deprived parts of the country, and it is fair to say that unless these mines are able to reopen, the economic outlook in the counties where they are located is very bleak.

The other one, Mr. Chairman, is environmental. In the process of providing for national security in fueling the nuclear power industry, the uranium industry produces substantial quantities of mill tailings which, in retrospect, we learn pose substantial health hazards that have to be met. It is a $1 billion problem that we have to address soon. The industry is willing to shoulder its share of the cleanup, but the fact is that the industry's share of the costs can't be picked up if there is no viable industry to pick them up.

Likewise, it seems to me that the industry's customers, the Federal Government and nuclear-powered utilities, should contribute to the cleanup cost. My colleague Bill Richardson's bill is certainly a step in the right direction, and I think we ought to take more than a close look at it.

In closing, Mr. Chairman, it is clear that there is a growing need for uranium. The United States has the most advanced mining technology and competitive ore deposits—that is, when competition is fair—and the largest customer base in the world. I think our domestic industry ought to have a fair shot at this business.

In closing, once again, I thank the chairman for mentioning the Cardinals and the Mets, and even the Red Sox, but I would appreciate it if you didn't mention the Rangers. We have heard the words "One Ranger, one ride—nine Rangers, one fiasco." Thank you, Mr. Chairman.

Mr. MARKEY. I thank the gentleman. Unfortunately, that might be the only proper analogy for the uranium industry at this point in terms of its ability to compete with the Canadians.

The next member is not a member of the subcommittee but is a member of the full committee, and it is at his request that we are conducting this hearing today, and he has been the chief advocate for appeals which will help to insure that we do have a viable uranium industry in the country: The gentleman from New Mexico, a member of the full committee, Mr. Richardson.

STATEMENT OF HON. BILL RICHARDSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW MEXICO

Mr. RICHARDSON. Thank you, Mr. Chairman.

I wish to thank you for the kind compliment, for agreeing to hold this hearing.

I also wish to thank all of my colleagues here. Many of them have been extremely instrumental in helping this industry, and second, for your statement that this is not just a New Mexico or a regional problem. It is a national problem.

I believe that the imminent collapse of the industry has implications far beyond any of our district. It jeopardizes U.S. energy independence, subjects U.S. utility ratepayers to price setting and price hikes by foreign governments, and is a symptom not of American inefficiency, but of unfair trade practice and manipulation of the marketplace. In addition, the collapse poses an important question of the accountability of one of our Federal agencies, the Department of Energy.

In 1964, Congress charged DOE's predecessor, the AEC, by statute to assure the maintenance of a viable domestic uranium industry. There was no sunset clause or other terminators on this duty. Yet, despite the clear and obviously catastrophic collapse of our domestic uranium industry, DOE has done nothing to assure it's viability, and in fact, even denied that industry was nonviable until September 26 of this year.

Now the agency's response is some obscure and clearly limited changes in enrichment policy which may marginally stimulate the demand for uranium at some future time. But the demand that is stimulated will probably flow chiefly to foreign producers, absent more forceful DOE action.

DOE has also called in Trade Representative Yeutter to study for another 3 months whether to have a trade study, and if so, which one. Sometimes I think that DOE is more interested in assuring the viability of the paper industry by commissioning studies of the industry in the viability of the uranium industry.

It is obvious that DOE needs some more oversight on this issue. I accordingly requested, along with my colleagues from New Mexico and others, that this hearing be held, and I am very grateful once again to the chairman for doing so. I appreciate his cooperation and his staff in preparing for this hearing.

I am especially pleased to welcome later as a witness Dr. Thomas Neff of MIT, who recently wrote a book on the international uranium market. I am not certain that I will agree with all of his conclusions, but certainly agree with many passages in his book indicating the heavy involvement of governments of South Africa and Canada in their uranium industry.

I am also pleased to welcome Mr. Selby and Mr. Farley, both of whom will be testifying later.

Mr. Chairman, to begin to address these issues, I have sponsored two pieces of legislation along with several of my colleagues here. One of these is H.R. 2236 which would provide an equitable mechanism to finance the cleanup of existing uranium mill tailings.

This proposal not only would fill a gap in existing legislation, but would contribute to the uranium industry viability and to employment opportunities ravaged by the collapse of the industry.

The second proposal, H.R. 3427, would impose an adjustable domestic content requirement for uranium used by American utilities.

These requirements would initially be set at 75 percent. For comparison, Canada currently imposes a 100-percent domestic content requirement which is not adjustable at all.

It is, I believe, an appropriate response to the kinds of unfair trade practices and Government interference which besets the international market.

I hope we can have some comment on these proposals today, but once again, Mr. Chairman, I wish to thank you for holding the hearing and my colleagues from New Mexico and Mr. Nielson and Mr. Strang from Colorado for their outstanding support in addressing these issues and in being here today.

Thank you.

Mr. **Markey**. Do any other members of the committee wish to make opening statements?

That will conclude that portion of the hearing.

And we now turn to our first panel of witnesses consisting of Members of Congress.

The first witness is the ranking minority member of the Interior Committee, also a Member representing the State of New Mexico, and someone who has had a longstanding interest in this issue.

We welcome you and your expertise to the panel today, Congressman Manuel Lujan of the State of New Mexico.

STATEMENTS OF HON. MANUEL LUJAN AND HON. JOE SKEEN, REPRESENTATIVES IN CONGRESS FROM THE STATE OF NEW MEXICO, AND HON. MICHAEL L. STRANG, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. **Lujan**. Thank you, Mr. Chairman and members of the subcommittee.

New Mexico holds roughly half of our country's low-cost uranium reserves. The State has long been our Nation's preeminent uranium producer. At one time we had five operating uranium mills with another under construction and yet other planned. Roughly 8,000 of our citizens were directly employed in the industry.

Today, only one mill is in operation, and the number of uranium miners can be counted on one hand. The industry is clearly in a state of collapse. This should be cause for national concern. We are more than ever dependent on nuclear-generated electricity. We are more than ever in need of secure sources of supply for nuclear fuel.

It is no answer to this position to claim that we can rely on imports. Foreign uranium industries are under heavy foreign government control. Indeed, only a few years ago, the major foreign producing nations sponsored a uranium cartel to limit production, to allocate business, and to raise prices. We would be more than a trifle foolish to get into a position of dependence on foreign supplies given this track record of cartelization.

There is another dimension to this problem. That is the growing evidence of unfair trade. Our neighbors to the north have subsidized their uranium industry in an amount in excess of $1 billion.

They protect the producers from competition. They allocate their domestic requirements under long-term contracts. And they review all export contracts annually as to prices, terms, and conditions.

It is hardly possible for our producers to compete against such a foreign government enterprise. It is unfair to our workers and their families. DOE's past and present enrichment policies have only helped to exacerbate the situation. Under existing law, DOE is required to limit enrichment of foreign source uranium for domestic end use to the extent necessary to assure the maintenance of a viable domestic uranium industry.

DOE's predecessor imposed such a limitation, but it was allowed to expire. If the uranium industry is nonviable—a fact DOE now admits—a limitation should by law again be imposed. The principal reason for DOE's failure to act now appears to be a conflict of interest: the agency fears that compliance with the law will interfere with its efforts to maximize its sales of enrichment services.

Although DOE, to its credit, has finally acknowledged that our uranium industry is nonviable, it has yet to offer anything more than another study of what to do. It is time to stop studying and start acting. For that reason, I am happy to sponsor, along with my colleague Mr. Richardson, two bills offering alternative approaches to unfair trade in nuclear fuel and to DOE's failure to implement existing law.

One approach, embodied in H.R. 3257, would require NRC to withhold licensing of imports that adversely affected the uranium industry's viability as determined by the Commerce Department.

The second, embodied in H.R. 3457, would impose a 75-percent domestic content requirement, subject to grandfathering and to adjustment as appropriate by DOE.

The current situation with respect to the financing of reclamation of uranium mill tailings poses another important problem.

Approximately 30 percent of the existing tailings at currently licensed uranium processing sites were generated under old AEC procurement contracts. These contracts were intended to reimburse for costs but failed to compensate for reclamation, because at that time, no one perceived a hazard.

The Federal Government has assumed financial responsibility for such tailings at so-called inactive processing sites, and in all fairness should bear its share at licensed sites as well. I am pleased to note that the General Accounting Office has reached a similar conclusion.

The situation is roughly the same with respect to tailings associated with commercial procurement contracts. The parties did not realize that tailings would entail hefty reclamation costs. It is appropriate the parties which benefited from the production of the uranium to bear a share of the costs associated with reclaiming the tailings.

I am therefore pleased to support H.R. 2236, which provides for an equitable sharing of the costs of tailings reclamation among the Government, the nuclear utilities, and the producers.

I would add one other point. I believe H.R. 2236 makes good environmental sense. In providing an equitable means of financing, it will encourage the timely and environmentally sound disposal of tailings, and it will do so in a fashion that will contribute to restoring our domestic uranium industry to a viable condition.

With that, Mr. Chairman, I thank you for allowing us to testify today and for holding these hearings.

Mr. **Markey**. Thank you very much, Congressman.

Our next witness, also from the State of New Mexico, Congressman Joe Skeen, has had a longstanding interest in this issue as well, and he wishes to share with us today some of his insights into what this committee should be doing.

We welcome you and your testimony.

STATEMENT OF HON. JOE SKEEN

Mr. **Skeen**. Thank you very much, Mr. Chairman and members of the subcommittee.

I appreciate the courtesy. You wouldn't have to be a wizard to gather that this issue is of extreme importance to New Mexico when you have all three Members of the House delegation here before you.

And I am not going to read my statement. I am going to submit if for the record, but I would like to summarize a few points that I think are important, very important, and pertinent to this particular issue.

Mr. Chairman, I did represent the district that Mr. Richardson has now before we redistricted. And this issue was of grave concern to us in New Mexico at that time, since we were the largest producer of uranium in the United States.

When I came to Congress, I surmised quickly that not everybody throughout the United States shared our enthusiasm for the production of nuclear materials, nor the nuclear energy question, and I certainly did appreciate your opening remarks in which you mentioned that now it is time to rationalize what we are doing in relation to our domestic production of uranium because a lot of the activity we can lay off on DOE and its action or inaction, but a lot of it, too, can be laid at the doorstep of Congress, and its action.

And I think many times we have responded emotionally rather than rationally to the question of where are we in respect to the generation of nuclear energy in the United States.

Well, I will tell you here we are, Mr. Chairman. We are at probably one of the lowest ebbs that we have ever been in dealing with an issue that I think has probably one of the most important impacts on our future of probably any other dealing with natural resources that I could think of.

We have, as has been iterated by my colleague from New Mexico, Mr. Lujan, we are in a very bad situation in our State as far as the employment. The economic background on the issue is terrible, and these three bills, I think, do represent a rationalization in approach that would say we need to resuscitate this industry; we need to revitalize it.

My concern is that in trying to talk about revitalization, we may have waited too long. I certainly hope not.

At least these bills represent a movement in the right direction, and I hope that they will be positively considered by the committee and affirmatively voted out into the full body, because I think it is time now we talked about what has happened to this industry, what is going to happen.

Let me just leave one last reminder of what is happening now. Since the shutdown of the uranium mining industry, we have a situation now that is occurring within the mining areas. Those mines are heavily watered. Those mines have had no maintenance whatever since the shutdown by these companies, because they could not produce this material at a profit, and the situation is now should we try to revive this industry?

We have a terrible problem on our hands as to who is going to dewater the mines. Who wants to work in the mines when they are extremely dangerous, and hazardous, and they are hazardous enough in this natural state. So it is something to think about, and it is something to reflect on.

I commend the committee for taking this issue up because I know it is not one of the most popular ones, including from the chairman's standpoint, and I understand his position very clearly.

But from our standpoint in the West who are large producers, and we depend a great deal on these materials that we do produce in great quantities, it is time that we dealt rationally with this issue, and I commend you and the committee for this approach and wholeheartedly support the objectives of these three bills.

I thank you very much.

[The prepared statement of Mr. Skeen follows:]

STATEMENT OF CONGRESSMAN SKEEN

Hearing Before The Subcommittee on
Energy Conservation and Power
House Energy and Commerce Committee
October 8, 1985

Mr. Chairman and Members of the Subcommittee, I want to express my appreciation to you for your courtesy in providing this hearing opportunity. The domestic uranium industry is in a clearly depressed condition. Prior to this decline, New Mexico hosted over 60% of the productive capacity in this industry. But in just 3 years, employment has plummeted over 90%, capital investment is virtually nil and domestic producers now supply less than one quarter of U.S. uranium needs. This is hardly an acceptable condition for an industry that is important to our energy and national security. To the contrary, it indicates that we have failed to provide an economic and regulatory environment conducive to this industry's existence.

If I may, I would like to take a moment to summarize three bills, all of which I believe deserve careful consideration by this Subcommittee and the Congress, that address this critical situation.

The first bill, H.R. 3257, introduced by my good friend and colleague Congressman Lujan, would impose conditions on NRC's licenses relating to importation of foreign-source uranium for domestic use. In particular, import licenses could

(MORE)

not be issued if the Department of Commerce determined that the import would adversely effect the viability of the domestic uranium industry. I believe this bill is necessary to ensure that consideration of the effect of imports on the domestic industry occurs prior to those effects occurring. We have seen the results of our failure to do this. Last week the Secretary of Energy determined that the domestic uranium industry was "non-viable," based, in large part, the effect of imports. The Energy Information Administration projects a rapidly growing dependence upon foreign source uranium. This finding certainly should inspire Congress and the Secretary to take bold action immediately to correct this situation.

The second bill, H.R. 2336, would establish an equitable funding mechanism for funding the reclamation of uranium mill residues, called mill tailings. Although at all times during their operation, these mills fully complied with federal environmental and safety standards, the mills have recently been subjected to an enormous change in these regulations, a change which will cost the industry in excess of $1 billion. In addition to it, being patently unfair for the industry to bear the full burden of these new costs, the industry has no way of generating this kind of money because it has lost its market to unfairly priced foreign uranium, as I alluded to earlier. I believe it is only fair to require those who benefitted from the uranium to pay their share of the clean-up costs associated with that uranium. The GAO has already said the U.S. government has a moral and financial responsibility to help stabilize the mill tailings, the same should be true for the other major customer group, the nuclear utilities, and for the same reasons. The bill would require that DOE contribute 30% of the cost of clean-up, because approximately 30% of the uranium went to the government uranium stockpile. The uranium companies would contribute 15% of the costs. The nuclear utilities would be responsible for the remaining 55%. It seems to me that the mill tailings are the last part of the nuclear fuel cycle to be addressed, and that a structure similar to the one created for high level nuclear wastes is appropriate.

The third bill, H.R. 3457, takes a very direct approach and would require 75% of all uranium used in domestic power reactors to be of domestic origin. This will benefit both the uranium mining and enrichment enterprises and is necessary until the market stabilizes and the mining industry is back on its feet. It is also less of a restriction than that which is already required under Section 161 v. of the Atomic Energy Act, which prohibits the enrichment of foreign uranium for domestic use if the industry is non-viable.

I encourage this Committee to act now, before it is too late.

I thank you for your consideration . . .

Mr. **Markey**. Our final congressional witness is from the State of Colorado. It is Hon. Michael Strang who, as well, has a longstanding interest in this issue, and we welcome you to our subcommittee as well, and we welcome any testimony which you wish to give.

STATEMENT OF HON. MICHAEL L. STRANG

Mr. **Strang**. Thank you, Mr. Chairman. I, too, appreciate your opening statement.

I am familiar with your background on this issue, and I respect your holding the hearings. I respect Mr. Nielson's comments and the comments of the other members of the committee.

I am also a supporter of the three bills.

There can be no question that in a uranium age, this great free Nation must have a domestic uranium industry. That has got to be clear to everybody.

In Colorado, uranium has been an important contributor, but the industry has fallen on very hard times.

Only one mill remains in intermittent operation, and that facility is a so-called captive plant which belongs to a midwestern utility. Only 10 percent of the uranium workers that once worked in Colorado are now working in the mines.

There can be no doubt as to the industry's status, and as the chairman has remarked, the Energy Secretary has finally declared the industry nonviable.

Why should we be concerned about it? The main concern is that it now fuels somewhere between 15 and 20 percent of our Nation's capacity, and I would guess that if we can work out some regulatory problems, you are looking at something in the vicinity of 25 percent, not to mention defense needs.

Given that it is nonviable, what ought to be done? I think that, without getting redundant, I will leave my statement with you, but basically the three bills before us identify some actions that we believe the Congress should take. I think the problems we have with dumping from Canada are quite clear, and the Chair has discussed those.

As far as Secretary Herrington's actions, I think that two of his actions, cessation of distribution of the U.S. stockpile for 1 year—that probably will help the market a little bit.

I think perhaps the study simply raises a lot of questions. We don't see why, for example, it is productive to do another study on this matter. We need some action, unless as Congressman Skeen has pointed out, we are just going to lose these mines entirely.

You cannot just go into an old uranium mine and start mining it. In fact, in many of them, the destruction from ground waters is so severe that the mine has to be abandoned.

To close briefly on a related matter, I am also concerned about the reclamation of some 12½ million tons of uranium mill tailings in Colorado and a fair and equitable allocation of the cost of such reclamation.

Consequently, I am a supporter of H.R. 2236. I am very grateful that you had this hearing, and I compliment Congressmen Lujan and Richardson, and I compliment the chairman for holding this hearing.

[The prepared statement of Mr. Strang follows:]

TESTIMONY
of
THE HONORABLE MICHAEL L. STRANG
Third District - Colorado

Before The
SUBCOMMITTEE ON ENERGY CONSERVATION AND POWER
On
STATUS OF THE URANIUM INDUSTRY

October 8, 1985

MR. CHAIRMAN and members of the Subcommittee, thank you for the opportunity to appear before you today to speak briefly on my concerns about the uranium industry.

Colorado, especially Western Colorado, has been an important contributor to uranium production. But the Colorado industry, like that in other key uranium states, has fallen on very hard times. Only one mill remains in intermittent operation, and that facility is a so-called captive plant belonging to one of our largest nuclear utilities. Only 10% of the uranium workers once employed are now working in Colorado's mines.

There can now hardly be any debate as to the industry's status. Energy Secretary John Herrington announced on September 26th his determination that the uranium industry is non-viable.

Why should we be concerned about this particular industry? Uranium has long been viewed as intimately related to our national security and to our energy independence. It now fuels over 15% of the nation's's electric generating capacity. This country made a considerable effort in the 1950's and the 1960's to develop a uranium industry capable of meeting our military and civilian needs. With U.S. nuclear fuel requirements greater than ever before and still expanding, now is hardly the time to abandon our concern for a secure and reliable domestic source of supply for this vital mineral.

Given that the domestic uranium industry is non-viable, the next question is what should be done. To answer that question one can begin by identifying the cause of this industry's collapse. There are two principal culprits. The first is previous DOE uranium enrichment policies which created a glut of uranium and enriched uranium, which DOE is now trying to work off as rapidly as possible. The second is a flood of foreign-source uranium, much of which is being unfairly traded.

Not much can be done to correct the mistakes of DOE's prior policies, although the agency certainly should do more to cushion the blows of its corrective measures on domestic producers. Much can be done to address the problem of unfair trade.

Let's focus for a moment on Canada, the source of over half of our uranium imports. There is unmistakable evidence that Canada and its provinces have poured more than a billion dollars into their uranium industry in recent years. Other witnesses to appear before you today will testify to the details. Much of the Canadian industry is in fact government owned. Canada enforces a 100% domestic content requirement, preserves its entire market for its own producers at high long-term contract prices, allocates production, and limits foreign ownership. Canada sells its surplus uranium in the U.S. at prices only about one-fourth to one-third as high as on its home market. It is a prima facie case of dumping, which is illegal under existing U.S. trade laws.

MR. CHAIRMAN, it is perfectly appropriate under the General Agreement on Tariffs and Trade [GATT] to take measures against foreign imports being unfairly traded on the U.S. market. This is not protectionism; this is common sense and fairness. My colleagues from New Mexico, Congressmen Manuel Lujan and Bill Richardson, have sponsored two bills, H.R. 3257 and H.R. 3457, which will begin to address the damage caused by this unfair trade. For this reason, I am please to support these measures.

As a follow-up to the determination of uranium industry non-viability, Secretary Herrington has committed to take three administrative actions. Two of these (namely, cessation of distribution of the U.S. stockpile for one year and allowing free variable tails assay option to some DOE enrichment customers) may result in some limited stimulation of demand for uranium. However, it is entirely conceivable that most of this increased demand will be satisfied with uranium from private inventories accumulated under previous DOE policies, or from foreign sources of supply. Certainly the limited measures DOE is implementing do not assure that we will regain a viable domestic uranium industry, although they are steps in the right direction.

Secretary Herrington has also requested Trade Representative Yeutter to head an interagency task force to study whether to initiate a proceeding, and if so, which one, under the various U.S. trade laws.

Secretary Herrington's request for another study raises a lot of questions. First, the traditional trade remedy for the domestic uranium industry is section 161(v) of the Atomic Energy Act. This provision requires DOE to limit enrichment of foreign source uranium for domestic end-use to the extent necessary to assure the maintenance of a viable domestic uranium industry. Trade Representative Yeutter has recently explained that implementation of section 161(v) does not contravene anv U.S. obligations under GATT. Since the domestic uranium industry is non-viable, why is section 161(v) not being implemented now?

Second, our domestic industry is rapidly disappearing. What we need is effective relief, not another study of whether to conduct a trade study. I am especially skeptical of whether the study requested by DOE will result in any meaningful relief, especially given press reports suggesting that the State Department, which will evidently take part in the study, is reluctant to do anything.

To close just briefly on a related matter, I am also concerned about the eventual reclamation of some 12.5 million tons of uranium mill tailings in Colorado and a fair and equitable allocation of the costs of such reclamation. Six years ago the GAO recommended that Congress provide assistance to active mill owners to share in the cost of cleaning up that portion of the tailings produced under the AEC contracts. Action on this matter is overdue and for that reason I have cosponsored H.R.2236, the Uranium Mill Tailings Reclamation Act of 1985.

MR. CHAIRMAN and members of the Subcommittee, I appreciate this opportunity to present my views and the leadership of the Chairman in taking a close look at the situation in which we find ourselves. I hope we can work together to resolve these matters in the most expeditious manner possible.

Thank you.

Mr. Markey. Thank you very much.

Let me begin by asking a single question which is the concern, as you may expect, that exists in other parts of the country; that is, the parts of the country that are reliant upon this uranium for the generation of electricity; that there is going to be increases in the electrical rates of consumers in other parts of the country, but specifically the portions of the country, the Midwest and the Northeast are the most heavily dependent upon nuclear generating capacity.

As we move from 50 to 70 percent of our domestic requirements being provided by foreign suppliers to a quota system that only allows them to provide for 35 percent, there are reports that that could result in a doubling, a tripling, a quadrupling of costs for this particular source of energy.

Could you comment on that?

Mr. Lujan. That is slightly ridiculous. The cost of the uranium in the total cost of electrical generation is such an infinitesimal part, anybody that tells you that it will even double or that it will even increase the rate substantially, it is just ridiculous because the uranium portion of the generation of electricity is just such a small, small part of it.

Mr. Markey. Your contention is the price of uranium itself would not increase substantially?

Mr. Lujan. No, no. Uranium would go up probably because it is more expensive to us unless we want to subsidize it like the Canadians do. The uranium would go up, but the cost of the electricity, the final product wouldn't be a pimple on—whatever, you know.

Mr. Markey. It all depends on whose whatever the pimple is on in this case.

Mr. Skeen. It is the proverbial gnat.

Mr. Markey. Let me see how big this pimple is. In terms of if you could quantify it, the rate of increase for electrical consumers, would it increase their bill $10 a year or $10 a month? What do you envision for their cost increase if they had a utility that was dependent upon nuclear power as their generating capacity?

Mr. Lujan. I certainly would not agree that it would even, you know, $10 a month or perhaps even $10 a year. It is just such a small, small part of the overall thing. Where your expense is coming from now, we anticipated that nuclear power would be the least of any kind of power that there could be, but the expenses come, as you know, because of the length of time and the money involved in the construction.

The fuel plays hardly any part at all in the generation of electricity.

Mr. Markey. Let me ask one final question, and that is our relations with Canada are good. They are our major trading partner. There is some concern if we engage in this kind of protectionist legislation that there will be a reciprocal response from the Canadians potentially in the utility area, and I will tell you why that is of concern to those of us in the Northeast. Because we are in the process of signing and have already signed some agreements, and will sign more in the future with the Canadians for the provision of huge amounts of hydropower, electrical generating capacity for the use of people in the Northeast, consumers.

These are contracts that are in the utility realm. There is some concern that if we in fact engage in this kind of activity relating to another part of electrical generating capacity, that we will see some sectorial response in that area with regard to the negotiation of other contracts that relate to the generation of electricity.

What would you advise those that come from other parts of the country that are afraid that as we press down on one part of the economy that it inevitably, eventually has to pop out at another part, and that Canadians will have to save face at a minimum, respond in some fashion and perhaps other parts of the country will pay the price for the policies which you are proposing that we enact?

Mr. SKEEN. May I address that?

Mr. MARKEY. Yes, please, Congressman Skeen.

Mr. SKEEN. Thank you, Mr. Chairman.

Let's take the whole trade question with Canada. I doubt seriously you are going to have any problem with Canada until they get themselves out of the recession they are in. They have not followed us out of it. They are not out of it, and they are one of our largest trading partners. As a matter of fact, the deals have been so good that we have had problems not just in the uranium industry, but in the hog business, in the natural gas business, in the wine business, and everything else because anything that they can import to us the Canadians want to import. And they are doing a good job of it.

Our consumers have certainly benefited by it. I would say to the people in the Northeast, if you are concerned about electrical generation, and they are, and they are also concerned about acid rain, and that is why Canada would like to provide hydroelectric power, and I am sure that northerners would like very much to receive it so long as it is at a very beneficial rate, and it probably will be so long as Canada has a nationalized industry that it has in power generation and transportation and everything else.

Now, I am not talking against the Canadians. They are great friends of ours, and we want to keep them. But our trade policy with them stinks, and it has for some time. It is consumer-oriented, and that is great because we like to give our consumers the benefit of every low dollar item that we can, vis-a-vis textiles from the Orient, the Pacific rim countries and all the rest.

You have heard enough of that debate today. Let's go back to the question of cost of electrical generation today. It is not just incident to those generators generating from nuclear sources. You are getting cost increases and power generation across the board from natural gas generators, from coal generators and all the rest because of the kind of situation we have. The economics of power generation in the United States today has increased those costs, particularly in uranium or in the nuclear generating area, because it is so damnably expensive to get a plant built, licensed and whatever in the time involved.

Of course you can imagine what has happened for the inflation time in that area. Cost to consumers is not predicated primarily on the cost of that fuel. What we are talking about here today is the strategic situation insofar as uranium production. It is important to us strategically. We do have to keep our domestic industry alive.

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A very important part of that is the commercial generation of power, but let's not forget also the production for our military use as well.

They are both jeopardized if we don't do something about the imbalance of trade that we have today. So I think it is important that we get all this in perspective, and it is fun to talk about what would happen if you do this. Does this pop up and so forth? Yes, it does. I won't sit here and tell you otherwise, and you won't believe me if I did, but let me say to you this, that there is a total field of consideration not predicated on just how are we going to go treat consumers.

It also impinges on the acid rain situation that we have which is of extreme importance to us in the United States and to our friends in Canada. And if we continue with the kind of energy generating policy we have, it is going to exacerbate that problem. It is not going to relieve it very much, in my opinion. Thank you.

Mr. **Markey**. Thank you. I am very sensitive to the gentleman's position. I just want him to understand as well that this is an issue that just can't be dealt with in isolation; that we have to understand that our overall trade policy with the Canadians is at stake, and that especially in the area of electrical generating capacity that there really is a threat that there could be some retaliation that would result from a policy that was taken, not with the narrow focus of eliciting some specific response, but rather with a cruder, broader brush policy that really is insensitive to the long-term relations that we are going to have to have with the Canadians in order to help the economies of both countries.

Mr. **Skeen**. May I respond to the chairman and say I certainly agree with you? It cannot be done on a narrow range of issues, and that is exactly what I am trying to say. If we don't broaden this issue spectrum greatly, from my experience in how we have been dealing with it in the Congress of the United States, but we ought to broaden it from the aspect of this side of the border for a change.

We are constantly concerned about the other side and what our friends are going to do, and so forth, and I think we should. We shouldn't ignore what is happening here in the United States. We can't afford to do that any longer. We have ignored it far too long now, and we need to have a broad consensus on this side of what is best for the United States for a change.

Mr. **Markey**. The chairman's time has expired. I recognize the gentleman from Utah, Mr. Nielson.

Mr. **Nielson**. Thank you.

I appreciate your comments, Congressman Skeen. I would like to remind the chairman the cost of the Uranium Enrichment Program and cost of subsidy would be far less than two mills per kilowatt proposed by the Acid Rain Program which was an area defeated 10 to 9 in the Environment Subcommittee. You are talking about maybe one/hundredth of that cost we are talking about.

First of all, I would also like to say you mentioned about Canadian problems there. I don't think it is a matter of our doing something and they are retaliating. I think they have done something, and we need to make up for what they have done. My sources tell me they sell—I want the chairman to hear this, if you would, Mr. Chairman. Would you wait just one second?

You asked about it. I want to say this while you hear it.

My sources tell me they sell uranium for $70 a pound to the nuclear plants, but they dump uranium on this country at $15 a pound partly because of the billion dollar subsidy they have. So I think before we start criticizing anything you might do to try to protect the industry, we should be aware of what is happening in that industry.

Let me ask a couple of questions to the panelists. Mr. Strang, you indicated that you favor all three of these proposals. I am just warm on one of the proposals. I won't tell you which. Why do you think we need a domestic content bill? Is there any other way to do it besides that?

Mr. STRANG. I am not sure, Congressman Nielson. I am one that really doesn't like the concept of domestic content very much, but one of the things we are faced with is a situation with the uranium which, as Mr. Lugan says, is not a big ticket item in a dollar amount in a plant. We have to decide as a nation whether or not it is crucial to have a domestic uranium industry. And if we as a nation decide that we believe it is, then we are going to have to do some things to be sure we have one.

If somebody could find another way than domestic content, I would be very happy to do it. I don't know what that way is, but this seems to be a way of getting at it, and I am alarmed about the timetable, about the calendar. I know we are going to lose some mines. So if the gentleman from Utah had a better system than domestic content, I think that would be wonderful. I haven't seen it.

Mr. NIELSON. Mr. Lujan, same question.

Mr. LUJAN. We could subsidize them like the others do, but I think the domestic content is probably—I would agree with it more. I am like Mr. Strang. I don't like to see all of that protection system that is moving along, but I think in this particular interest we have more than just the jobs that it will generate in the Southwestern part of the United States.

We are talking about our ability to have uranium in a time of emergency. Let me follow up on a couple of things that were brought up a little earlier. I am told that the increase in electrical generation in the cost for electricity would be about $5 a year if it did go to the highest figure. And then also in the question you raised the dumping question, and what they buy it for in Canada.

They also require 100 percent domestic content. So it would not be that we are starting something or that they would have to retaliate. The only thing they could do is keep their policy where they have it. That is about as bad as it can get.

Mr. NIELSON. I appreciate that. I also appreciate the comment made by Congressman Skeen about the natural gas situation. We hold in our shallow wells a lot of gas for $1½, $2 price, and we import Canadian $4 and $5 which does not make economic sense to me at all. So I think there are a lot of things we could do to become more energy dependent and less dependent on Canada for a lot of things.

I feel very strongly about this industry. My district—I hate being a freetrader because my district has Endicott copper and steel and uranium, so it is different to be a freetrader. I like to think of myself as a fairtrader. I like to have an even playing field. Canada has made it very uneven and all you are trying to do is to suggest we make the field a little more even and play by the same rules Canada is playing by; is that correct?

Mr. **Lujan**. Yes.

Mr. **Nielson**. Any comment?

Mr. **Skeen**. We obviously have an agreement. I am not a protectionist. I have been around this country long enough to know what happens when you throw up the barriers and so forth, but on the other hand, too, I think that we have failed to deal pertinently and aggressively on trade issues with other countries because I think that, as voiced by the chairman earlier, that we don't want to lose a friend.

We want to help them with their economic problems, but then I think we do that to the damage of our own domestic industry many times when we could reach a solution that was more in between or more of a better compromise.

That is what I am advocating as far as my stand is concerned. I don't like the domestic content aspect of this because I was opposed to it in automobiles. Of course that got a little bit ludicrous because most of the domestic content legislation we have had up dealing with automobiles, I don't know that there is a company in the United States on what could qualify under domestic content because most of the parts are made somewhere else, and they are assembled here, even on the so-called domestic produced automobiles.

This doesn't—this is not the case in the case of uranium or some of the natural resources. This is our long suit in many of our States in the West that we are the largest producers of natural resource anywhere in this country. And we provided a great deal of the energy resource and many other raw resources, and that has caused us a lot of problems.

We would like to do more processing. We would like to continue the vertical integration of some of those industries, and we have barely begun this, but the minute you do, because of the import situation—this is not the only one that is bothering us. For instance, just in the State of New Mexico we have got a bad copper situation because of the dumping of copper. We have also got a bad situation in New Mexico on potash, and we are the foremost producer of potash in the United States, but the Canadians are dumping potash into this part of the country.

The very same companies that are producing it in our State are also producing it in Canada. I can understand their economic concern. This protection system thing does have two edges, and it ought to be handled very carefully. So that is why we are here today, to tell this committee we appreciate your broadening concept and your perception of what this problem is. And we know that with a great intelligence vested in this committee and the rest—how do you like that one? If I didn't get Utah on that one, nothing did.

Mr. **Nielson**. I thank the gentleman.

Mr. **Bryant** [presiding]. The gentleman's time has expired. Does the gentleman from Mexico have anything?

Mr. Richardson. I have no comments. Both of the gentlemen at my table know about this. I wish to commend them on their efforts in behalf of the industry. In the interest of my colleague, Joe Skeen, nowhere those problems of copper and potash are more manifest, and I wish to thank him and Congressman Strang, too.

I have no questions, Mr. Chairman.

Mr. Bryant. Thank you.

The gentleman from California.

Mr. Moorhead. I have no questions at this time. Thank you.

Mr. Bryant. We call to the witness table Mr. Hanrahan.

Mr. Moorhead. I ask unanimous consent to put into the record my statement.

Mr. Bryant. Without objection, so ordered, to insert in the record as well the statement of Mr. McCain. Without objection his statement will be inserted. [See p. 8.]

[The prepared statement of Mr. Moorhead follows:]

Statement of Hon. Carlos J. Moorhead

Mr. Chairman, I want to thank you for scheduling today's hearing. There is no question that the uranium industry is faced with grave problems. Employment has shrunk to 2,000 workers and only three of twenty-four mills are in operation. Domestic production has fallen to one-fifth of U.S. usage. Producers are decommissioning facilities, flooding mines, and withdrawing from this industry. The uranium industry is, in effect, disappearing.

The plight of this industry should concern all of us, uranium is a resource that our Nation has been blessed with abundance. It fuels a form of energy that is environmentally sound, safe and economical. It also serves an important role in our national defense. The deterioration of this industry could have dire consequences for our national security interests and for our energy future.

I look foward to hearing from the witnesses today. Congress needs to fully understand the causes for this industry's difficulties. I welcome suggestions for the appropriate remedies. I am particularly interested in having the witnesses address the question as to how we should respond to unfair trade practices on the part of foreign uranium suppliers.

However, in fashioning these remedies, we cannot afford to be short-sighted. For example, it would be a mistake for Congress to force the Department of Energy to adopt new policies that result, not in an increase in demand for domestic uranium, but in a diversion of domestic demand from U.S. enrichment services to foreign suppliers.

Mr. Chairman, I am pleased to work with you and the other members of this subcommittee on the difficulties facing uranium industry. It is my suspicion, however, that the health of this industry is tied directly to the viability of the nuclear energy option. Only by solving the problems associated with the nuclear regulatory and licensing process, can the uranium industry have any confidence in its own future. I look foward to the resumption of the legislative hearings on nuclear regulatory reform, and I trust that we will be able to craft the legislation necessary to solve the problems plaguing nuclear power.

I ask unanimous consent to place the letter to the chairman from Representative Cheney into today's record. Thank you.

Mr. Bryant. Mr. Hanrahan, go ahead and proceed.

STATEMENTS OF EDWARD HANRAHAN, DIRECTOR OF DEFENSE POLICY, DEPARTMENT OF ENERGY, ACCOMPANIED BY JOHN R. LONGENECKER, DEPUTY ASSISTANT SECRETARY FOR URANIUM ENRICHMENT; WILLIAM R. VOIGT, JR., ACTING DIRECTOR, OFFICE OF REMEDIAL ACTION AND WASTE TECHNOLOGY; AND R. GENE CLARK, DIRECTOR, NUCLEAR AND ALTERNATE FUELS DIVISION, ENERGY INFORMATION ADMINISTRATION

Mr. **Hanrahan**. Thank you. Mr. Chairman, I am pleased to appear before you today to discuss Secretary Herrington's determination of the viability of the domestic uranium mining and milling industry.

On September 26, Secretary John Herrington made the legislatively required annual determination of the viability of the domestic uranium mining and milling industry. He determined the industry to be not viable in calendar year 1984.

The legislation requiring this determination set forth factors which should be included in the criteria established by regulation. The four primary criteria established by the Department in the Code of Federal Regulations are: Resource capability, supply response capability, financial capability, and import commitment dependency.

Resource capability is defined as the extent to which domestic economic uranium reserves can supply domestic nuclear power needs for a future 10-year period. Supply response capability involves a measure of the level of domestic uranium production capacity sufficient to meet projected domestic nuclear power needs for a future 10-year period. Financial capability is the ability of the domestic uranium mining and milling industry to obtain sufficient funds to finance an adequate supply response capability.

Import commitment dependency measures whether executed contracts or options for imported source material or special nuclear material will result in more than 37.5 percent of actual or projected uranium requirements for any 2 consecutive calendar years.

I'll discuss resource capability and import commitment dependency first, then the other two primary criteria. The Energy Information Administration analysis, based on estimates supplied by U.S. producers of the amount of uranium available for sale over the next 10 years, indicates that the reserves are sufficient to supply domestic nuclear power needs under plausible assumptions of a wide range of potential futures.

As to import commitments, natural uranium imports in 1983 and 1984 represented, respectively 25.9 and 37.4 percent of U.S. requirements. Current import commitments for natural uranium for future delivery make up no more than 26 to 32 percent of projected annual U.S. utility requirements. Thus the import commitment dependency criterion is not exceeded; that is, imports do not exceed 37.5 percent for a 2-year period.

When considering supply response capability, the technical capability of the uranium industry to meet domestic nuclear power needs is dependent on the status of uranium production facilities at the time of the disruption and on its ability to raise funds. Thus, supply response capability must be viewed in conjunction with the finajcial capability of the industry.

In the assessment of the supply response capability criterion, a disruption beginning in 1991 of one-third of imports would result in uranium supply requirements in excess of projected domestic production capability for several years following the disruption. For larger disruptions, projected maximum production capacity is insufficient to meet requirements throughout the 10-year disruption period. The ability of industry to respond is reduced for lower nuclear power forecasts due to the smaller uranium production base, and for disruptions occurring later in time since more economic domestic uranium will have been consumed and the interim low prices would have forced the permanent reclamation of mines and decommissioning of mills that currently contribute to standby capacity.

To have an adequate supply response capability to meet a future import disruption, the domestic uranium industry must be able to increase investment in exploration and in mining and milling. This ability will be dependent on the financial health of the industry in the years prior to a disruption. Thus, the successful implementation of supply response capability will depend upon the continuing good health of the domestic uranium industry.

Revenues for the uranium industry have declined from the 1981 peak of over $1 billion to barely half that value in 1984. Net income during 1980, 1982, and 1984 was negative, while during 1981 and 1983 the industry had modest net earnings. For the 5-year period, the industry lost almost $154 million.

The industry's fixed assets in property, plant, and equipment, declined by over 40 percent from 1981 to 1984 reflecting the industry's attempt to restructure and consolidate in the face of unfavorable market conditions and the uncertainty of its recovery in the near term. Thus, there has been a diminution of industry assets. There is no longer a significant flow of either externally or internally supplied funds to the industry of 1984.

On the basis of the market prices forecast by EIA for 1987 to 1989, the domestic uranium industry production can be expected to decline further to a level of about 10 million pounds of production per year, with fewer producers than are in business today. The domestic production that is assured by economically producible contracts is less than a third of the annual domestic requirements.

Because of its continued weakened financial condition, with little expectation of change in the next several years, the domestic uranium industry is not expected to be able to expand production to meet an increase in domestic requirements caused by a potential disruption of imports. It was on the consideration of these two primary criteria taken together; namely, supply response capability and financial capability, that Secretary Herrington made his determination.

There are two other determinations that are authorized by section 170B of the Atomic Energy Act. The first of these is a discretionary determination that source material or special nuclear material from foreign sources is being imported in such increased quantities as to be a substantial cause of serious injury, or threat thereof, to the U.S. uranium industry.

Based on such a determination the U.S. Trade Representative requests the U.S. International Trade Commission to initiate an investigation under section 201 of the Trade Act. Because of the relationship with section 201 of the Trade Act, a Secretarial determination of injury or threat of injury could implicate complex issues of international trade.

The facts and implications surrounding such a determination should be carefully examined by executive agencies who have responsibilities for foreign and trade policy. Therefore, Secretary Herrington has asked the U.S. Trade Representative to examine the issue of uranium imports with a view to determining the appropriate available courses of action rather than making the determination now. The Trade Representative has been asked to provide a preliminary report on this examination within 3 months.

The other determination also has to do with imports. If the Secretary determines that the level of executed contracts or options involving imported source material or special nuclear material for use in U.S. facilities is greater than 37½ percent of domestic requirements for any 2-consecutive-year period or may threaten to impair the national security, then he requests an investigation by the Secretary of Commerce under the Trade Expansion Act to determine the effects on national security.

Current import commitments for future delivery of uranium make up no more than 26 to 32 percent of total annual U.S. requirements in any year. Also, the Department of Energy has a large stockpile of uranium that can meet foreseeable defense requirements at a minimum into the 1990's. Thus, this determination was not made.

The Department is also taking two actions. First, Secretary Herrington has directed that the surcharge for requesting the variable tails assay option by our enrichment customers with a utility services contract be removed. This will only apply to customers who take 100 percent of future enrichment requirements. This action should help working off the inventory of uranium held by utilities, stabilize supply and demand, reduce cost for our customers, and stabilize the Department's sales base.

Second, the Department will not overfeed the enrichment plants in fiscal year 1986 from the Government-owned uranium stockpile. This is a continuation of the fiscal year 1985 operating mode. While there is no real effect on the mining and milling industry whether we overfeed or not, there is a perception by some in the industry that overfeeding may depress sales for them. By this decision the Department is avoiding even the perception of causing harm to the industry. However, the Department reserves the right to overfeed in future years.

In conclusion, the Department will continue to monitor the uranium industry and take actions as appropriate. This completes my testimony, and I will be happy to answer your questions.

[Testimony resumes on p. 67.]

[The following letter and responses to prehearing questions were submitted:]

NINETY-NINTH CONGRESS
EDWARD J. MARKEY, MASSACHUSETTS, CHAIRMAN
[illegible]
CARLOS J. MOORHEAD, CALIFORNIA
MICHAEL G. OXLEY, OHIO
HOWARD C. NIELSON, UTAH
MICHAEL BILIRAKIS, FLORIDA
FRED J. ECKERT, NEW YORK
JAMES T. BROYHILL, NORTH CAROLINA
(EX OFFICIO)
[illegible]
CHIEF COUNSEL AND STAFF DIRECTOR

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HOUSE OFFICE BUILDING ANNEX NO. 2
PHONE (202) 226-2424

U.S. HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON ENERGY CONSERVATION
AND POWER
OF THE
COMMITTEE ON ENERGY AND COMMERCE
WASHINGTON, DC 20515

September 30, 1985

The Honorable Edward Hanrahan
Director of Defense Policy
Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Mr. Hanrahan:

The Subcommittee on Energy Conservation & Power will hold a hearing on the viability of the domestic uranium industry on October 8, 1985, at 1:30 p.m. in 2322 Rayburn House Office Building. I invite you to testify at this hearing and to address the viability of the industry and the various issues affecting its status, including the reclamation of uranium mill tailings and the Department's enrichment policy. In addition, I request that John Longnecker, Deputy Assistant Secretary for Uranium Enrichment, and Gene Clark, Director of Nuclear and Alternate Fuels Division of the Energy Information Administration, accompany you.

I have attached a set of prehearing questions which will help the Subcommittee analyze this complex issue. Furthermore, these questions should provide an outline of issues which you might want to address in your testimony. Please respond to these questions by October 7, 1985.

While your detailed written statement for insertion in the hearing record may be of any length you deem appropriate, it should be double-spaced. You are also requested to submit a one-page summary of your written statement.

In accordance with Committee rules, witnesses scheduled to testify should deliver a minimum of 25 copies of their written and summary statement to the Subcommittee 48 hours in advance. Also, please bring an additional 80 copies of your statement to the hearing room by 1:30 p.m. on the day of the hearing for distribution to Members of the Subcommittee, the public and the press. Upon your arrival at the hearing, please give your testimony to the Subcommittee clerk.

If you have any inquiry concerning your hearing appearance lease contact Gerry Waldron of the Subcommittee Staff at 202-26-2424.

Sincerely,

Ed Markey
Edward J. Markey
Chairman

PRE-HEARING QUESTIONS AND ANSWERS

Question 1: On September 26, 1985, the Secretary of Energy announced that the domestic uranium industry was "not viable." As part of that determination, the Secretary announced three steps designed to assist the industry. In a briefing by your staff about these actions, the staff asserted that the first step, an offer of a free variable tails option as a means of encouraging utility customers to purchase their full requirement, would increase sales of uranium by "70 million pounds over the next five years." The staff further projected that the increased sales would provide "an extra $400 million to the enrichment program." Please supply the subcommittee with all memoranda and other documents which DOE considered in reaching these conclusions including, but not limited to demand forecasts, costs of the new DOE policies, and discussions of viability.

Answer: The free variable tails assay option offer was made available to our customers who elect to purchase 100 percent of their requirements from DOE. This represents the opportunity for increased sales to both the uranium miners and the enrichment enterprise. Utilities have uncommitted requirements of about 4 million SWU per year beginning in the early 1990's. If these customers elect to purchase 100 percent of their requirements from DOE, then enrichment sales would increase by about $400 million assuming a price of about $100 per SWU. The corresponding uranium sales would amount to 14 to 20 million pounds U308 annually. Over a five year period, the additional uranium requirements amount to 70 to 100 million pounds U308.

This determination was not made on the basis of particular reliance on any such forecast but, rather, reflected the Department's general understanding of the relationship between the mining industry and the enrichment enterprise. What is described here is similar in all respects to the assessments available to the Secretary in making his determination on viability.

Question 2: Apparently, you believe that this contract change does not require a change in criteria since you have not submitted the change to Congress. Supply the Subcommittee with a legal memorandum explaining why this change is not a change in criteria, and why this change was not made pursuant to the Administration Procedure Act.

Answer: The Department of Energy believes that the free variable tails option is consistent with the prevailing uranium enrichment services criteria at 44 Fed. Reg. 28875 (May 17, 1979). The criteria provide that prices will be established "on a nondiscriminatory basis and on a basis of recovery of the Government's costs over a reasonable period of time." This option will be available to all U.S. contract customers who agree to purchase their full requirements from DOE and will substantially increase DOE revenues by generating additional sales. Since the option is available to all customers who elect it, it is "nondiscriminatory." The additional revenue generated will assist DOE in satisfying the cost recovery mandate. The concept of offering enrichment customers flexibility in selecting their tails transactions is not new; it has been offered by DOE in different forms since 1978. See 43 Fed. Reg. 27886 (June 27, 1978).

The offer of variable tails is not itself "a rule" subject to the rulemaking requirements of the Administrative Procedure Act at 5 U.S.C. §551.

Question 3:	What is the fiscal year 1986 price for enriched uranium? How and when were customers notified of this price? Was this new price published in the Federal Register? Were past prices published in the Federal Register? Supply the Subcommittee with a copy of the letter notifying customers of the new price, and all documents supporting the new price.
Answer:	The FY 1986 DOE charge for uranium enrichment services under the Utility Services contracts is $125 per separative work unit. DOE announced this new price on September 4, 1985, by direct correspondence to our customers. This price announcement was not published in the Federal Register as had been our practice in the past. Attached are copies of the letters sent announcing the price and all supporting documents.

PRICING METHODOLOGY

In arriving at the $125 per SWU charge, we made some mechanical changes, but the overall approach of recovery of costs over a reasonable period of time remains unchanged. The primary difference is that in arriving at previous prices we calculated a price that was assumed to remain constant over a 10-year period and this price would provide sufficient revenues to recover the projected costs over the 10-year period. The current practice is to demonstrate that a given pricing profile, $125 in FY 1986 and declining prices thereafter, provide sufficient revenues to recover costs over a 10-year period. The cumulative profit and loss projections are used to demonstrate that costs are being recovered over the 10-year period.

Attached are (1) a table showing the projected costs, prices, and resulting profit and loss for the next 10 years (the $590 cumulative profit in 1995 provides a contingency against unforeseen events), (2) a breakout of the price into its major components, and (3) a listing of the major assumptions used.

DETAILS OF $125 PRICE

Costs in Millions of FY 1986 $

FY	Power Taken	Power Not Taken	Other Operating	R&D
1986	403	415	200	105
1987	391	453	172	99
1988	665	383	163	108
1989	757	350	185	108
1990	832	271	191	108
1991	1,207	12	191	85
1992	1,081	-	191	52
1993	1,147	-	202	27
1994	1,103	-	248	25
1995	1,000	-	296	25
	8,586	1,884	2,039	742

FY	Depreciation	Interest	Misc.	Total	Base Prices	P&L
1986	85	248	891	2,347	125	384
1987	88	242	30	1,475	115	100
1988	89	236	33	1,677	105	-182
1989	90	230	29	1,749	100	-436
1990	91	226	25	1,744	100	-558
1991	92	231	20	1,838	100	-459
1992	93	238	20	1,675	100	-174
1993	93	233	11	1,713	97	217
1994	94	231	10	1,711	90	455
1995	104	233	0	1,658	86	590
	919	2,348	1,069	17,587		

COMPONENTS OF $125 PRICE

Power:	
Taken	$ 61.03
Not Taken	13.39
Other Operating	14.49
R&D	5.27
Depreciation	6.53
Interest	16.69
Misc.	7.60
	$125.00

MAJOR ASSUMPTIONS FOR THE $125 PER SWU CHARGE

1. Compliance with recovery of appropriate Government costs over a reasonable period of time.
2. The pricing period is FY 1986 through FY 1995.
3. The value of assets (plant, inventories, etc.) are as recorded in the September 30, 1984 Uranium Enrichment Financial Statements, projected to September 30, 1985, assuming a $3.5 billion reduction relating to GCEP.
4. Projected cost of money to the Government, FY 1986 through FY 1995 at 9% per annum.
5. Demand projection based on the December 1984 mid demand for enrichment services.
6. Includes results of the incentive price offer for FY 1987-1990.
7. Termination of the Gas Centrifuge Enrichment Plant at Portsmouth, and continuing R&D on the AVLIS program leading to the construction of a 9.77 million SWU per year plant with initial production in 1995.
8. No relief from TVA capacity charges.

Department of Energy
Oak Ridge Operations
P. O. Box E
Oak Ridge, Tennessee 37831

BD-85-111 September 4, 1985

All Enrichment Services Customers

Gentlemen:

The purpose of this letter is to announce a new lower price for Utility Services contract customers. The Department of Energy (DOE) is committed to being a reliable supplier of enrichment services at competitive prices. Secretary Herrington announced on June 5, 1985, that a major aspect of the U.S. uranium enrichment strategy is to reestablish competitive prices. In fact, the major impetus behind the decisions to select the Atomic Vapor Laser Isotope Separation process over gas centrifuge, to terminate the Gas Centrifuge Enrichment Plant project, and to place the Oak Ridge Gaseous Diffusion Plant in standby was to enable the Department to reduce its prices to competitive levels.

We are taking a major step to achieve this objective by reducing the current charge for Utility Services contracts from $135 per separative work unit (SWU) to $125 per SWU. This change will become effective on October 1, 1985. Charges under Fixed-Commitment contracts and Requirements contracts are not being changed at this time.

These price announcements pertain only to enrichment services up to 10 weight percent U-235 as a separate price is being established for high assay enrichment services. The General Accounting Office has recommended that DOE separately account and price for the cost of high assay enrichment services. The Department has agreed to implement this recommendation beginning in FY 1986. The price for enrichment services above 10 weight percent U-235 is $492 per SWU and will become effective on April 1, 1986. This price will apply to all types of enrichment contracts. The price for enrichment services below 10 weight percent U-235 will be determined by the contract type. Holders of contracts containing a ceiling provision will continue to receive the protection of the ceiling charge. Because of the high cost of producing enriched uranium above 10 weight percent U-235, we will no longer approve assignments or other transactions requiring DOE consent that will enable a customer to purchase high assay enrichment services at prices other than $492 per SWU.

We appreciate your loyalty to us in the past and we pledge to reward that loyalty by managing the enrichment program in a way that minimizes future costs to assure competitive prices, and by remaining a secure source of supply. This price notice replaces the previous practice of announcing prices in the Federal Register. If there is any way that we may serve you better, please do not hesitate to contact me.

Sincerely,

F Clark Huffman

F. Clark Huffman, Director
Business Operations Division

EO-21:Ford

September 4, 1985

See Addressee List

The purpose of this letter is to announce a new lower price for Utility Services contract customers. The Department of Energy is committed to being a reliable supplier of enrichment services at competitive prices. Secretary Herrington announced on June 5, 1985, that a major aspect of the U.S. uranium enrichment strategy is to reestablish competitive prices. In fact, the major impetus behind the decisions to select the Atomic Vapor Laser Isotope Separation process over the gas centrifuge, to terminate the Gas Centrifuge Enrichment Plant project, and place the Oak Ridge plant in standby was to enable the Department to reduce our prices to competitive levels.

We are taking a major step to achieve this objective by reducing the current charge for Utility Services contracts from $135 per separative work unit (SWU) to $125 per SWU. This change will become effective on October 1, 1985. Charges under Long Term Fixed Commitment, Adjustable Fixed Commitment, and Requirements contracts are not being changed at this time.

We appreciate your loyalty to us in the past and we pledge to reward that loyalty by managing the enrichment program in a way that minimizes future costs to assure competitive prices, and by remaining a secure source of supply. If there is any way that we may serve you better, please do not hesitate to contact me.

Sincerely,

John R. Longenecker
Deputy Assistant Secretary
for Uranium Enrichment
Office of Nuclear Energy

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NE-32	*Schmitt	8/30/85
NE-32	*Peske	8/30/85
NE-30	*Gillis	8/30/85
NE-30	*Laughon	8/30/85
NE-30	*Longenecker	8/30/85
GC-2	*EFygi	8/30/85
MA-1	*Hessee	8/30/85
NE-1	*Vaughan	8/30/85

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Question 4: What are the Department's views on H.R. 2236, a bill to provide for the reclamation and other remedial actions with respect to mill tailings at active uranium and thorium processing sites?

Answer: The Department questions the premise of the proposed legislation that would require U. S. utilities with nuclear powerplants and the Federal Government to pay the bulk of the costs to clean up currently licensed, commercial facilities. The precedent of substantially relieving the owners of commercial facilities involved in nuclear power activities of the site cleanup costs is an undesirable one for the nuclear industry and for waste generators in general.

In addition, the Department has a number of concerns with specific aspects of the proposed legislation. First, the management structure proposed by the Act, in which the Department would have the overall responsibility for the reclamation, would be extremely complicated and difficult to administer. The abundance of management interfaces, including site owners, nuclear utilities, States and Indian Tribes, the Nuclear Regulatory Commission, and construction contractors, would make disciplined project cost and schedule control extraordinarily difficult. Our experience with the inactive mill tailings sites projects strongly indicates that this structure would be beyond the realm of effective control in the project management sense.

Answer 4
(continued): The proposed Act would also establish a Uranium Mill Tailings Fund to collect and manage funds for tailings remediation. Based on the Department's experience in managing the Nuclear Waste Fund, this would require that we establish a disproportionately large financial management organization within the Department for this purpose, adding to the overhead cost and complexity of the project.

The proposed fee on power generated by nuclear utilities does not appear to distribute cleanup costs fairly and equitably. No provision is included for contributions from foreign generators of nuclear power although 14 to 15 percent of the uranium mined and milled in the last 10 years has been marketed overseas. In addition, no direct relationship exists, as a basis to establish a fee, between the amount of electricity to be generated by U. S. nuclear utilities in the future and the quantity of and associated cleanup cost for mill tailings generated in the past. Without such a relationship, analogous to the proportionality between nuclear power generated and spent fuel created which is the basis for the Nuclear Waste Fund fee, there is no rationale for any particular fee for a Uranium Mill Tailings Fund.

Answer 4
(continued): Inclusion of thorium processing sites in the proposed legislation adds a significant element of uncertainty as to the scope and cost of the reclamation effort. The Department has no reliable information on the number of these sites, nor the extent of cleanup activity required. In addition, there is no basis of which we are aware to consider owner/operators of these sites as subject to the considerations being discussed relative to the uranium mining and milling industry. We recommend that the proposed legislation be limited to uranium processing sites.

The Department believes a solution to the cleanup of mill tailings can be developed within the framework of the approach initially established by Congress in P. L. 95-604. Disposition of licensed processing sites, when they reach the end of their useful lives, should remain the responsibility of the owner/operator. They are familiar with the characteristics of the site and its operating history, local concerns and issues, and the regulatory authority under which they hold their license. The terms of their license for tailings control during operation are directly relevant to the requirements for long term disposition, and they are in the best position to make this transition with maximum

Answer 4 (continued): efficiency. Private management of the reclamation effort would provide maximum incentive to control costs and eliminate any additional costs associated with Government project management. Governmental contributions to tailings reclamation, if required, should be handled through grants to the owner/operator without government management and administration. Based on our experience with the inactive sites projects, we estimate the cost of the licensed uranium sites cleanup will be in range of $2 to $4 billion, with the potential for saving 30-40 percent of this amount if Federal control and management is eliminated. NRC surety estimates and EPA estimates of these costs under private control are much lower. Although we believe these conceptual estimates will prove to be too low, they reinforce our belief that substantial savings can be achieved without Federal management.

The Department also believes that, if governmental support of tailings reclamation is decided upon, the States in which the tailings are located should contribute an equitable share. The 90 percent/10 percent governmental sharing established by Title I of P.L. 95-604 would appear to be an equitable approach with an appropriate precedent.

In summary, the Department believes the approach to mill tailings reclamation originally provided by Congress in P.L. 95-604 should largely be adhered to. Governmental contributions, if required, should be shared between the Federal and State governments and should be provided directly to the owner/operator. The owner/operator should remain responsible for implementing the reclamation under the terms of his NRC license and for bearing all or a substantial portion of the costs. The legislation should be limited to uranium processing sites.

Question 5: It has been suggested that many problems afflicting the domestic uranium industry could be solved with a requirement that 75% of the uranium purchased by DOE come from domestic sources. What effect would this have on the price of enriched uranium? What effect would this have on demand? What are the Department's views on a 75% domestic content requirement?

Answer: DOE is not purchasing uranium as existing stocks are adequate to meet DOE needs for many years to come. However, if there was a requirement that 75 percent (or any significant percent) of U.S. utility purchases of uranium for enrichment by DOE come from domestic sources, then there could be a detrimental impact on DOE's uranium enrichment enterprise and on the mining industry. Because of the higher costs of domestic uranium, this action would provide an economic incentive for U.S. utilities to terminate their enrichment contracts with DOE and purchase both their uranium and enrichment services from foreign sources.

The economic incentive to purchase from foreign sources varies widely from customer to customer depending on existing uranium and enrichment contract conditions and prices. To arrive at a reasonable upper limit on the exposure of enrichment sales losses, we made an analysis using existing market prices. Under these conditions, utilities have an economic incentive to terminate

Answer 5:
(continued): 23 million SWU from DOE over the next 10 years with lost revenues to DOE of over $2 billion.

We recognize that (1) not all of our customers may elect to purchase foreign natural uranium and/or uranium enrichment even with an economic incentive to do so and (2) a change in the assumption could lessen or increase the potential lost revenues. However, it is clear from our analysis (including sensitivity around major variables) that the economic incentive to purchase from foreign sources is large and that DOE enrichment sales losses would be significant. The reference case of $2 billion over the next 10 years represents a reasonable upper limit of the revenue impact. The potential for uranium sales losses by the domestic uranium industry is proportional to the lost DOE enrichment sales. In the reference case, the amount of potential uranium sales losses to the domestic uranium industry is 90 million pounds U3O8 over the next 10 years.

6. QUESTION: Does the Department see any risk to placing restrictions on international energy trade? Does DOE see any risk to our nation placing restrictions on energy trade between the United States and Canada when the Northeast and New Energy region use significant amounts of Canadian energy?

ANSWER: The Department believes in extending the principles of competition and minimized federal involvement in the international market. We do not believe that it is in the best interests of any country to protect any sector of its market from international competition, unless its national security is clearly threatened. Such protection simply deprives the consumer of the benefits that result from full competition and lower prices and encourages other nations to implement similar measures. In addition, we oppose any effort to require that our foreign customers of enrichment services be made to purchase U.S. uranium. Such restrictions would drive our important foreign customers to purchase nuclear enrichment services from others, thus undermining an important non-proliferation policy.

As a result of actions taken both here and in Canada much of the regulatory and other restrictions to energy trade which had existed between our two nations have now been removed, resulting in an increase in the flow of energy at competitive prices and in the process, enhancing our energy security by allowing the U.S. to reduce its dependence on less reliable suppliers.

Question 7: Does the domestic uranium industry today meet the demands of domestic purchasers of uranium? Is the uranium industry presently capable of meeting future demands for uranium, assuming that demand remains at current levels? What if demand for uranium significantly decreased? increased?

Answer: The domestic uranium industry industry currently provides approximately 50 percent of today's demand for domestic purchases. The remainder is met by imports and inventory draw-down.

The production capability of the domestic uranium industry has declined, so that it is not expected to meet total future domestic requirements.

Since the financial health of the domestic uranium industry continues to decline and a turn around is not expected, the domestic industry is not expected to be able to expand production to meet a significant increase in demand. Should there be a significant decrease in demand for uranium, the industry's production capability would be expected to be about the same as under the expected conditions.

Question 8: Does the uranium industry have the financial capability to respond to a sudden increase in demand for uranium? Does it have the resource capability to meet an increase in demand for uranium?

Answer: The domestic uranium industry is not expected to have the financial capability to respond to a sudden increase in demand for uranium. Because of its weakened financial capability, and although the EIA report indicates that the domestic uranium industry does have the resources to meet an increase in demand, it may have difficulty producing the resources necessary to respond to a sudden increase in demand.

Question 9: Why is a viable domestic uranium industry vital to the interests of our nation?

Answer: The domestic uranium industry implicates vital interests of our Nation because a significant fraction of the Nation's electricity is generated by nuclear power and our strategic defense has a major nuclear component. Congress recognized the importance of this industry in the Atomic Energy Act of 1954.

Question 10. What is the financial ability of the uranium industry to carry out its legal responsibilities under the Uranium Mill Tailings Act?

Answer: A detailed study of individual companies' ability to finance mill tailing cleanup would have to be undertaken to arrive at a definitive answer to the question. The EIA study shows that the industry's financial ability has declined over the past several years. We do not have specific data on the ability of specific companies to meet these obligations.

Mr. **Bryant**. Mr. Hanrahan, I understand the department has estimated the cost of mill tailings reclamation under H.R. 2236, the Richardson bill, to cost in excess of $4 billion.

Do you continue to rely on that estimate?

Mr. **Hanrahan**. I would like to ask Mr. Voigt, who is Director of Remedial Action and Waste Technology Progams, to address that question.

Mr. **Voigt**. That estimate, Mr. Chairman, was based on our experience from title I of the existing legislation of the inactive mill tailing sites. Based on that experience, which in total will cost about $925 million minus the vicinity property's work, which is about $290 million, or a total of $635 million. If you divide that by the total tonnage that we are processing, on the order of 25 million tons, this comes out to be $25 a ton processed. So, if you take the quantity estimated for the active sites of 173 million tons times our title I cost experience, this equals the $4 billion estimate.

Mr. **Bryant**. I understand about 40 percent of the costs were attributed to DOE administration of the program. What do you estimate the cost would be without DOE administration?

Mr. **Voigt**. We estimate if DOE did not administer it, you could save up to 40 percent. Our estimate is somewhere between $2 billion and $4 billion, due to the economies of scale you might experience in that you are doing a lot more processing of mill tailing quantities. So I am saying the cost could be below $2 billion.

Mr. **Bryant**. Does DOE take the position that passing a bill would facilitate a more rapid reclamation of the mill tailing sites?

Mr. **Voigt**. Yes, we do, sir.

Mr. **Bryant**. What about the cost plus aspect of uranium contracts? Do you recognize that aspect of uranium contracts with domestic suppliers in that the then AEC intended to reimburse producers for all costs incurred in uranium production including cleanup costs plus a small guaranteed profit?

Mr. **Voigt**. I am not sure just exactly what the original contract did stipulate, Mr. Chairman. We do admit that the Government's contract did amount to some of those tailings, but exactly how much, we are not sure at this point.

Mr. **Bryant**. The gentleman from California.

Mr. **Moorhead**. Thank you. Mr. Hanrahan, is the figure correct when they say that we have—we are producing only 37 percent of the uranium we are using in this country?

Mr. **Hanrahan**. No; that is not quite correct. In 1984, about 50 percent of domestic requirements were met by domestic production in that year. The remainder, the other 50 percent of requirements was met by imports and by inventory drawdowns.

The situation is that there are large inventories of uranium held by utilities who purchased these under contracts, fixed commitment contracts with miners, at a time when their nuclear plants were either canceled, delayed, or deferred, so they built up large inventories of uranium. Those are being drawn down. Most of that is probably domestically produced uranium, but not directly for that year's production.

Probably more like 70 percent would be domestically produced.

Mr. **Moorhead**. Is the percentage of the market available to the domestic industry going down, however?

Mr. Hanrahan. Well, in terms of committed contracts, no. There are still large uncommitted portions of the uranium market that both foreign or domestic producers are competing for. So it depends on what the utilities buy as to whether there is a greater or lesser market share.

Mr. Moorhead. There seems to be no dispute about the fact that the uranium mining industry is in trouble, though.

Mr. Hanrahan. Doesn't seem to be any dispute over that, sir.

Mr. Moorhead. Many of them told me that their mines are being closed. Union Pacific said they were going out of the business. Others are having a lot of troubles. The market must be shrinking in some way.

Mr. Hanrahan. Well, the market shrank from what the expectations were 7 or 8 years ago when, as the chairman noted in his opening statement, there were expectations for much larger nuclear growth and that there would be more nuclear powerplants coming into operation, and the mining industry expanded to meet that perceived demand which never came to pass.

Many had contracts with customers, and those customers were required to take the uranium which they did not need. So there is a glut, a large inventory of uranium sitting out there.

Mr. Moorehead. If a large number of these mines in New Mexico and out of some of the Northern States closed down, are there security implications for the future?

Mr. Hanrahan. It is certainly not apparent at this time. The Department has a very large inventory of uranium, about 68,000 tons of uranium which it procured from the producers, mainly domestic producers, in the past as a means of providing a market for them, and that, we believe, is capable of supplying national security needs for quite some time.

Mr. Moorhead. Are there any long-range implications of the current plight of the uranium industry?

Mr. Hanrahan. Certainly, the implications are as I pointed out in the testimony; that there will be fewer firms in the industry. There will be less domestic production. That is expected to continue until the mid-1990's when domestic and worldwide demand picks up a great deal more; then foreign producers will not be capable of providing the whole world with uranium and domestic production will become more competitive as the world price for uranium rises.

Mr. Moorhead. As I understand the law, the DOE is authorized to restrict enrichment of foreign source uranium to the extent necessary to insure the viability of the domestic uranium industry. Is this right?

Mr. Hanrahan. Yes, sir.

Mr. Moorhead. If it is, in light of the DOE's recent finding of nonviability, does the DOE intend to restrict their enrichment of foreign source uranium?

Mr. Hanrahan. The imposition of such a restriction would require a rulemaking because that would require a change in the uranium enrichment criteria. The facts, as we understand them now do not indicate that imposing such a restriction on enriching foreign uranium for domestic purposes would be of assistance to the domestic industry.

Mr. MOORHEAD. Well, the rulemaking is done by the Department, not by the consulate.

Mr. HANRAHAN. That is right.

Mr. MOORHEAD. That is a process the Department would have to engage in.

Mr. HANRAHAN. That is right.

Mr. MOORHEAD. Are there any changes in the laws that are necessary at this time, in your opinion, to help the industry?

Mr. HANRAHAN. Well, the things that would help the domestic uranium industry in the long run are more nuclear powerplants. They need more customers. If the ability to build nuclear powerplants economically on time and to operate them efficiently were improved, if that whole climate were improved with the kinds of legislation or other actions that have been proposed by the administration so that there was a resurgence in nuclear power, then you have got a demand for uranium.

If the utilities were operating their reactors at the 75- or 80-percent capacity factor that they were designed and expected to operate at rather than the average of 50 to 55 percent, there would be 50 percent more uranium consumed, and that would be a great benefit to the domestic industry.

Mr. MOORHEAD. In your projections, do you look forward to that happening?

Mr. HANRAHAN. Sir, I have looked forward to that happening for a long time, but my hopes continue to be dashed.

Mr. MOORHEAD. Some of us try to help toward that end.

Mr. HANRAHAN. I realize that, sir. There are a lot of people working very hard at that, and there doesn't seem to be a great deal of success surrounding those efforts.

Mr. MOORHEAD. Does the DOE have the legal authority to impose restrictions on the import of foreign source uranium?

Mr. HANRAHAN. Only through the enrichment criteria. We have legal authority, by changing the enrichment criteria to restrict the enrichment of foreign origin uranium for domestic use. We cannot exercise that as an import restriction, per se. In other words, if we were to impose that restriction at the enrichment plant, domestic utilities would still be free to import enriched uranium, uranium of whatever origin enriched overseas and used in this country.

Mr. MOORHEAD. Has the DOE investigated the domestic users' claim? Much of the success of foreign import uranium is due to unfair trade prices?

Mr. HANRAHAN. We have not specifically examined that claim, and there are provisions in the trade laws for relief of those situations, and the industry has not brought forward that evidence that could provide that relief through the trade channels that those laws operate under. I think that would be appropriate for them to bring forth the data or the information to support those claims.

Mr. MOORHEAD. Well, as I understand it, at least I have been told, the uranium produced in Canada in the eastern part of the country costs just about the same amount as it does to produce uranium in the United States, and the conditions are very simple. But there is a vein in the West that they can produce much cheaper and of better quality.

They sell the cheaper and better to us in order to wipe out our industry, and they don't sell the other stuff to us.

Mr. **Hanrahan**. Well, as I understand it, sir, the Canadian utilities have long-term contacts with the miners, with eastern miners, eastern Canadian miners, and are paying high prices for that under those long-term contracts. The same thing is happening in this country. There are many utilities in this country that have long-term contracts with domestic producers that are paying very high prices for that uranium.

They are not paying $15 a pound. They are paying more like $50 and $60.

Mr. **Moorhead**. You mean when those contracts run out the situation will change, and they will be buying more of that western?

Mr. **Hanrahan**. One would hope so.

Mr. **Moorhead**. I have no further questions.

Mr. **Markey**. The gentleman's time has expired.

The Chair recognizes the gentleman from New Mexico, Mr. Richardson.

Mr. **Richardson**. Thank you very much. Mr. Hanrahan, two things you said you wanted to correct for the record or maybe I misunderstand. Did you say that DOE felt that the mill tailings bill would speed up the reclamation of mill tailing sites and that you were in favor of that bill?

Mr. **Voigt**. I was going to ask a question relative to that, Congressman. I interpreted the question to say it would not speed it up, but was it to speed it up?

Mr. **Richardson**. The question was to speed it up, but it sounded as if Mr. Hanrahan was enthusiastically supporting that.

Mr. **Voigt**. I am the one that answered that, and, now that I understand the question, the answer is "No." In my view if the bill, as presently structured, were to be passed, it would not speed up the reclamation of those mill tailings. In fact, if the Government were to have it, it would slow it down.

Mr. **Richardson**. What are your specific objections? What if we change the funding formula? Is that your main concern or is there something cumbersome about the bill in terms of the deadlines? What specifically would make you support the bill?

Mr. **Voigt**. There are a number of concerns, Congressman. In fact, I would like, with the Chair's permission, to insert into the record a copy of the testimony that we made before a joint hearing that we had before the Senate and the House on July 16th whereby we, in effect, opposed the bill as presently structured.

Mr. **Markey**. Without objection that will be so ordered, although with reluctance we admit Senate testimony to the House.

Mr. **Voigt**. At least it was a joint hearing.

[Testimony resumes on p. 82.]

[The statement referred to follows:]

STATEMENT OF
JAMES W. VAUGHAN, JR.
ACTING ASSISTANT SECRETARY FOR NUCLEAR ENERGY
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
U. S. SENATE
AND THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT
U. S. HOUSE OF REPRESENTATIVES

JULY 16, 1985

Mr. Chairman, I am pleased to be here today to present the Department of Energy's comments on S. 1004 and H.R. 2236, two proposals currently under consideration that would finance reclamation and other remedial actions at active uranium and thorium processing sites.

BACKGROUND

Concerns over uncontrolled disposition of uranium mill tailings, with the potential for public health and safety impacts, led to the passage of Public Law 95-604, "The Uranium Mill Tailings Radiation Control Act of 1978." Title I of the Act directed the Department of Energy (DOE) to carry out appropriate remedial actions for certain inactive, largely abandoned uranium processing sites. Title II assigned responsibility for the decommissioning and stabilization of the licensed sites to the site owners under license with either the Nuclear Regulatory Commission (NRC) or the applicable agreement State. The legislation also authorized the Environmental Protection Agency (EPA) to establish standards for the cleanup of the processing sites and the final disposal of the mill tailings.

STATUS OF TITLE I PROGRAM

The Department began its Title I work immediately following enactment of Public Law 95-604 in November 1978.

During FY 1979, information was gathered on the 22 processing sites identified in the Act for remedial action, plus some additional sites the Department had identified for possible remediation. In November 1979, 25 sites were officially designated by the Secretary for remedial action under the Act. One site, near Baggs, Wyoming, was later dropped because it was determined to be on public lands administered by the Bureau of Land Management and therefore ineligible, reducing the total number of processing sites to 24. Authorization for the cleanup of the vicinity properties at Edgemont, South Dakota, was subsequently added by enactment of Public Law 97-415. Along with their designation, the priorities for the processing sites were also determined in consultation with the EPA Administrator. Nine processing sites were designated as high priority, six as medium priority, and nine as low priority.

From 1980 through 1983, a wide range of activities was carried out prior to the start of actual remedial actions. Responsibility for day-to-day project management of Title I activities was assigned to the Department's Albuquerque (New Mexico) Operations Office. Negotiation of cooperative agreements with the 10 States involved in the program was initiated. Data collection and analysis required by the National Environmental Policy Act began for the high priority sites. Coordinated Federal and State property acquisition procedures were developed, and steps were taken to acquire the Canonsburg, Pennsylvania, processing site. Commercial interest in reprocessing the tailings was solicited, but none was found due to the high cost of reprocessing compared to uranium value. A technology development program was initiated to develop the most cost-effective methods for radon suppression and stabilization of the tailings in accordance with the standards then being developed by the EPA.

To identify those properties in the vicinity of the processing sites which had become contaminated with material from the sites, the Department obtained data from earlier surveys conducted by the EPA or States and, in addition, initiated aerial surveys of the areas surrounding the sites and street-to-street surveys using a vehicle developed for this purpose. This led to the designation of 8,156 properties for possible inclusion under the Title I program.

EPA standards for this program were issued in January 1983 and became effective on March 7 of that year. This enabled the Department to proceed with the National Environmental Policy Act documents, final remedial action plans, and engineering designs. Remedial actions are now underway at the first three high priority sites. Preparations are well underway to begin work at the remaining sites.

Progress has also been made in the area of vicinity property cleanup. Of the 8,156 properties initially designated for possible inclusion in the Uranium Mill Tailings Remedial Action (UMTRA) project, 1,600 have been surveyed to determine if the level of contamination exceeds EPA standards. Approximately 960 of these 1,600 require remedial action and have been included in the program. Based on this experience, we estimate that a total of about 4,500 vicinity properties will require cleanup. Remedial action has been completed at approximately 150 properties and is now underway at an additional 170 sites.

LESSONS-LEARNED: TITLE I COSTS AND SCHEDULES

While the Department has been reasonably successful in implementing the UMTRA Title I project, we have experienced problems with project schedules and costs.

Milestones for several of the sites have been delayed due to the difficulties in achieving a consensus on a course of action among the numerous parties involved in each individual project. One of the most prevalent issues is reaching agreement on stabilization-in-place versus relocation of the tailings. The latter course of action is more acceptable to most local communities, even though relocation of the tailings is usually more expensive, time consuming, and not technically necessary in many cases. As a result of these "front end" delays, work on as many as 15 sites may be underway simultaneously in the remaining years of the cleanup effort authorized by Public Law 95-604.

The Department has also experienced considerable growth in the total estimated cost of the project; we are currently revising our cost projections based on experience and initiating a series of actions to better control cost growth. However, it is clear that the total cost has grown from initial estimates of less than $200 million (1978 dollars) prior to enactment of Public Law 95-604 to the range of $700 to $900 million (escalated through 1990) as standards have been set and actual experience gained. The current maximum cost for each of the Title I projects is included in the Department's response to questions posed in the Subcommittee's June 28, 1985, letter.

Several factors contribute to these cost and schedule difficulties.

Schedule Delays

Public Law 95-604 requires the Department of Energy to obtain the formal concurrence of the NRC and the affected State or Indian Tribe in the planning and performance of all remedial actions. In addition, the owners of the sites and adjacent properties, local governments, local citizen groups, and other Federal agencies, particularly the Department of Interior, play a role in these plans and negotiations. The opposition, or even the uncertainty, of any of these parties with respect to proposed remedial action plans requires resolution and often causes extensive delay. The start of remedial action at Salt Lake City, Utah, for example, was delayed approximately 1 year while reaching agreement on the Remedial Action Plan; similarly, work at both Riverton, Wyoming, and Gunnison, Colorado, will be delayed about a year and about 6 months at Durango due to extended negotiation on the Remedial Action Plan. Much of this opposition is based on an absence of general public acceptance or on varying interpretation of the EPA standards.

Other delays can be caused by the complexity of the Federal procurement process in obtaining contractor support and the acquisition of real estate. For example, 1 to 1 1/2 years are required to get a contractor under contract and doing effective work. Similar time scales apply to completing cooperative agreements with State governments and Indian Tribes.

The Department is currently reviewing its overall completion schedules to reflect experience of the past 2 years. We anticipate that the types of delays I have noted and the total number of projects to be efficiently managed may require up to a 2-year delay (beyond 1990) before final completion and certification of some of the Title I sites, including two of those designated high priority.

Cost Escalations

A major contributor to cost escalations is the higher-than-anticipated cost of meeting the requirements of the EPA standards (40 CFR Part 192), particularly the need to assure isolation from the environment for a 1000-year period. Important areas of high cost are features for ground water protection and protection against flooding and river migration. We are currently making an assessment of how the various requirements and interpretations of the standards bear upon Title I costs and plan to discuss this experience with the EPA, NRC, and Congress.

A second and related cost factor is the need to acquire considerably more site characterization data (particularly on ground water) than had been anticipated to satisfy National Environmental Policy Act and other requirements.

A third cost factor has been the difficulty and extended time in negotiating agreement on remedial action plans among the many parties involved in the project. The examples of schedule delays listed previously also have had an impact on project cost.

Lastly, costs have been impacted by the requirement to pay wage rates governed by the Davis-Bacon Act for Federal construction projects, even though work at mill tailing sites does not involve construction in the typical sense of the term. It is estimated that labor rates are increased as much as 25 percent by the requirements of Davis-Bacon.

PROPOSED URANIUM MILL TAILINGS RECLAMATION ACT OF 1985

Title II of the Uranium Mill Tailings Radiation Control Act of 1978 specifically assigned responsibility for reclamation of active, licensed sites to the mill owner, using standards to be established by the EPA under direction of the NRC or the agreement State, as its licensor.

Accordingly, the Department seriously questions the premise of the proposed legislation that would require U.S. utilities with nuclear powerplants and the Federal Government to pay the bulk of the costs to clean up currently licensed, commercial facilities.

The situation in this case is different from those sites included in Title I, which were already inactive and which had been almost exclusively involved in producing uranium for Atomic Energy Commission needs. The precedent of relieving the owners of commercial facilities involved in nuclear production or processing activities of the site cleanup costs is an undesirable one for the nuclear industry and for waste generators in general.

POTENTIAL IMPACTS OF THE PROPOSED LEGISLATION

The proposed legislation, if enacted, would authorize the Department to carry out the reclamation of currently licensed sites in a manner similar to that being followed for the Title I sites. Based on our experience in administering the Title I program, we have a number of serious concerns with this approach in addition to our basic policy concern, which I have discussed.

The management structure proposed by the Act would be extremely complicated and difficult to administer. The Department would be required to execute contracts with each site owner, each nuclear utility, each affected State or Indian Tribe, and each project management and remedial action contractor. In addition, DOE would have to operate in a licensee relationship with the NRC. Our experience with the current UMTRA project strongly indicates that disciplined project cost and schedule control would be extraordinarily difficult under these circumstances. The abundance of management interfaces, many with comment and/or approval rights, would make the process uncontrollable in the project management sense. A simpler approach is needed to avoid large uncertainties in the cost and time required to carry out the program. The preferred approach would be to leave the responsibility for reclamation to the mill owners, to be carried out under their license consistent with Title II of Public Law 95-604.

The proposed Act would also establish a Uranium Mill Tailings Fund to collect and manage funds for tailings remediation. We are opposed to this funding mechanism for both practical and procedural reasons.

Based on the Department's experience in managing the Nuclear Waste Fund, this fund would require that we establish a sizable financial management organization within the Department for this purpose, further adding to the overhead cost and complexity of the project.

The proposed fee on power generated by nuclear utilities as a major contributor to tailings cleanup costs is intended to spread these costs over a wide base and to reflect the status of these utilities as benefactors of the process that generated the tailings. The proposed fee does not appear to distribute cleanup costs fairly and equitably. First, since 14 to 15 percent of the uranium mined and milled in the last 10 years has been marketed overseas, the domestic nuclear power industry would contribute to the Fund while foreign generators of electricity from nuclear power would not. Second, no direct relationship exists between the volume of tailings to be cleaned up (and the cost of that cleanup) and the amount of electricity generated by individual utilities in the future. Lacking the equivalent of a proportional relationship between power generated and spent fuel created--the basis for the Nuclear Waste Fund fee--the rationale for establishing the utility contribution to the Uranium Mill Tailings Fund at 0.15 mill per kilowatt hour and creating an earmarked fund is unjustified.

Several specific provisions of the Act are objectionable. Particularly, we find no justification for imposing budget submission requirements that are extraordinary to Chapter II of Title 31 or for exempting the fund in law from the apportionment requirements of the Antideficiency Act.

Title II of the 1978 Uranium Mill Tailings Radiation Control Act adequately provides for remediation of active sites licensed on or after January 1, 1978, by the site owners under the terms of their license and the EPA standards developed for such sites. There are several advantages in leaving the responsibility for reclamation of the processing site with the site owner/operator. First, the owner/operator is already familiar with the history and characteristics of the site and its environs, with local landowners, citizens groups and governments, and with the regulatory authority under which he holds his license. Second, the insertion of an "outside" organization such as DOE and its costs are avoided and lines of authority are shortened. Third, the difficulties inherent in Government project administration would be avoided. Finally, the owner, would have a strong incentive to control costs.

TITLE II COST ESTIMATES

Based on current estimates of the quantity of tailings associated with the uranium sites covered by the proposed legislation, and assuming direct applicability of the previously cited UMTRA Title I project cost experience on processing site remediation, we estimate the total cost of cleanup of the active (Title II) sites to meet the EPA standards could exceed $4 billion. Some reduction relative to the UMTRA experience may be possible due to economies of scale associated with the larger active sites and to not having to relocate piles, but there is insufficient data on either issue to make a meaningful estimate. However, this cost could be as much as 30-40 percent less without Federal control and management of the projects.

NRC financial surety estimates for remedial action at these sites, by the site owner, under the existing Title II requirements of the Uranium Mill Tailings Radiation Control Act, are much lower, totaling less than $200 million. EPA has made an estimate of $350 million on a similar basis. Although we believe these conceptual estimates will prove to be low, they reinforce our belief of substantial savings to be achieved without Federal management.

Our estimate excludes costs associated with "vicinity property" cleanup because no estimates have been made on the extent of offsite contamination associated with these sites. In addition, we have no estimate for thorium processing sites because we have no information at this time on the number or characteristics of such sites.

It is clear that the cost of remediation to meet the EPA standards will be large, and the Federal Government's proposed share would constitute a major commitment of Federal funds. We strongly believe that the best way to control and limit this commitment, if there were to be one, is to avoid unnecessary overhead and inefficiencies by eliminating the major role proposed for DOE and keeping the responsibility for management of the remediation effort and careful control of all costs, including his own substantial share, with the private mill site owner.

RECOMMENDATIONS

Consistent with the intent of Public Law 95-604 and based on our experience to date in carrying out the Title I program, the basic approach originally outlined by Congress remains valid.

Licensed sites, as they reach the end of their useful lives, should be the responsibility of the owner/operator. In addition, the sites can be adequately and more cost-effectively decommissioned by the owner/operator than by reassigning this responsibility to DOE.

While recognizing the need to resolve a difficult problem, DOE recommends that both Subcommittees reconsider the proposed legislation in light of the issues we have raised here today. We would be pleased to provide any further information and advice that would assist your respective staffs in formulating a program that more appropriately meets the overall objectives for this effort.

Mr. Chairman, this concludes my statement. I would be pleased to respond to any questions at this time.

Mr. RICHARDSON. I guess the second clarification I wanted was in 1983 DOE did phase out the restrictions in the enrichment program. Did you not?

Mr. HANRAHAN. Yes, sir; as a result, that was the end of a phase out that went over about a 10-year period.

Mr. RICHARDSON. Well, now in 1966—do you see the domestic uranium industry better off now than it was in 1966? Or, let me ask you this: Would the reimposition of those sanctions or those restrictions, would that help or would that hurt the industry?

Mr. HANRAHAN. On the basis of what we know today, we believe it would not help the industry because it would allow domestic utilities to import enriched uranium so that we would not only lose uranium sales overseas, we would lose domestic enrichment sales overseas.

Mr. RICHARDSON. So you say the U.S. Enrichment Program would also be hurt?

Mr. HANRAHAN. Yes, sir; no question about that.

Mr. RICHARDSON. By reimposing a restriction that seemed to work in the sixties and seventies?

Mr. HANRAHAN. In the sixties we were the world's sole supplier of enrichment services and could act as a monopolist, and indeed did at that time. The conditions are no longer so. We have some very strong competitors in Europe, and indeed even the Soviet Union is a participant in the world enrichment market today, which was not the case at that time.

Mr. RICHARDSON. Now, when you announced your new U.S. contract in January 1984, it was openly stated in your documentation that provisions in this would have no effect on the domestic uranium industry. You have continued to state this in your defense, and as you know, it is currently in litigation with U.S. uranium producers.

Last week when you announced your finding that the industry was not viable, which I guess is a change, you announced changes to the enrichment program; is that correct? In other words, you said that demand would increase by 70 million pounds over 7 years. Now, is this change of heart a mistake at an earlier assessment or is this a change of policy or what is it?

Mr. HANRAHAN. I think there are two different things going on there, and I would ask Mr. Longenecker to address those.

Mr. LONGENECKER. When we introduced the utility services contracts, Congressman Richardson, in 1984, the statement we made was that its introduction and its provisions would not have a negative impact, per se on the total domestic mining industry. The reason for this statement is the one Mr. Hanrahan stated earlier; the imbalance of supply and demand and the depressed sales of both enriched and natural uranium resulted from the fact that fewer reactors were being built than had previously been anticipated.

In 1984, if you look at the enrichment contracts that we had, including requirements and fixed commitment contracts for which domestic miners were supplying feed, almost all of the 3½-year requirements contracts with DOE had been terminated. We had about half of the 5-year requirements deliveries terminated, and we had over one-half of the fixed commitment customers, the take-or-pay customers, putting zeros in their needs statements for the late 1980's. What we saw for both the enrichment industry and the miners was that although we would continue making near-term sales on a take-or-pay basis, we were both losing sales to foreign suppliers. In the late 1980's, sales would have dropped like a rock to almost zero in the longer term, and then would likely recover slowly, say, in 4 to 5 years. So our logic in introducing the contracts was to work off those inventories gradually to avoid a very abrupt impact. Our announcement that accompanied the nonviability decision last week was one that provided free VTAO to customers and also stated our agreement not to overfeed the GDP's for 1 year.

Mr. Richardson. Although you kept your option open afterwards, which is a little troublesome. Either you are going to do it or you are not.

Mr. Longenecker. If I could take the free VTAO first, Congressman, that issue is one that has been raised by both the mining industry and utility customers during the last year in our discussions with them. The desire for free VTAO by our utility customers is stimulated because our foreign competitors do not charge for VTAO.

When we issued the U.S. contracts in 1984, our cost base was such that we could not foresee, for the 1987 timeframe and beyond, having the cash-flow to be able to waive the surcharge. With the decisions that were announced on June 5th of this year to cancel the GCED Program, to terminate the Gas Centrifuge Development Program, and place the Oak Ridge gaseous diffusion plant in standby, our cost structure for the enrichment program now allows us to offer free VTAO. Two years ago, if we looked at the revenue picture, it would not have supported our offering free VTAO.

This decision was a direct result of discussions we had over the past 2 years with the mining industry, and with our utility customers, both of whom will benefit. It could also benefit us, of course, because we tied free VTAO to customers who elect to buy 100 percent of their enrichment from the United States. That will shore up our long-term sales base and, we believe, create important sales opportunities for the domestic mining industry.

Mr. Richardson. You have announced your three steps, the overfeed being the third. The domestic industry quarters—I don't think they feel that is a step that is necessarily going to bring them back to viability, but I suspect it is a start. Let me ask you this. The Department basically has said our ideas or my ideas, the mill tailings bill, the 87 import restrictions aren't such hot ideas.

What are you going to do? What else can you do? What other steps do you plan to take, or are you planning to take any further steps to help the domestic uranium industry, or is that it? Is that the end right now?

Mr. Hanrahan. I think as of the moment, that is what the Department is and can take because we have to await the outcome of what the Trade Representative might recommend in the way of actions, but we will continue to see what the status of the industry is and move in other directions should it be appropriate.

Mr. Richardson. I can tell you the status of the industry. Do you want me to tell you?

Mr. **Hanrahan**. It may change. There may be other implications that——

Mr. **Richardson**. When will the industry in your philosophical, political, economic, bureaucratic judgment be viable? Do you have any projections based—let's assume the steps you have taken are going to lead us in that path. You must have taken those with some projections that we are going to turn the corner and things are going to get better. When?

Mr. **Hanrahan**. I don't think we have a projection as to when the industry might get better. I don't think we would be——

Mr. **Richardson**. Will it be in your and my lifetime?

Mr. **Hanrahan**. I really could not forecast that, sir.

Mr. **Richardson**. Mr. Chairman, I have one more question, but I don't want to impose.

Mr. **Markey**. You have already gone this far so we will give you one final question.

Mr. **Richardson**. You keep—EIA and your Department keep statistics of uranium imported into the United States by foreign countries. Is that correct? Do you still do that?

Mr. **Hanrahan**. Yes, sir.

Mr. **Richardson**. Does that include trusteeships like, say, Namibia, in Africa?

Mr. **Hanrahan**. Yes, I believe so.

Mr. **Richardson**. You plan to continue doing that?

Mr. **Hanrahan**. Yes, sir.

Mr. **Richardson**. Thank you, Mr. Chairman.

Mr. **Markey**. Thank you.

The gentleman's time has expired. Gentlemen, let me ask you a few questions. The Atomic Energy Act places several burdens on the Secretary of Energy with respect to the uranium industry. Section 161(v) states that DOE, "to the extent necessary to assure the maintenance of a viable domestic industry, shall not offer such services for foreign material."

Section 170(b) states, "The Secretary shall monitor and report to Congress a determination of the viability of the domestic uranium industry." Does the Department construe the word, "viability," to have the same meaning under both provisions?

Mr. **Hanrahan**. Yes.

Mr. **Markey**. It does. Doesn't a finding that the industry is not viable dictate a cut-off of enrichment services for foreign-sourced uranium?

Mr. **Hanrahan**. No; it does not.

Mr. **Markey**. Why is that?

Mr. **Hanrahan**. The 170(b) requires a report to the President. It does not require any further action—161(v) is prefaced by that term to the extent necessary to maintain a viable industry. It is our——

Mr. **Markey**. You have already defined that the industry is not viable.

Mr. **Hanrahan**. That is right.

Mr. **Markey**. And section 161(v) states that if you find that industry is not viable, that you shall not offer such services for foreign material.

Mr. **Hanrahan**. It doesn't say if you find it not viable to do that. It says to the extent necessary.

Mr. **Markey**. To assure that the maintenance of a viable domestic——

Mr. **Hanrahan**. Our consideration is that by what we understand at this time to impose such a restriction will not help the domestic industry for the reason that it will——

Mr. **Markey**. Let me just say this. The word is "shall." You don't have discretion here. As I read this phrase, the sentence, it says, "If you determine that it is nonviable * * *." I mean that this the opposite way of reading this. That is that DOE, to the extent necessary to assure the maintenance of a viable domestic, which it can be read the other way once you determine it to be nonviable, that you shall not, shall not offer such services to foreign material.

How do you get around that?

Mr. **Hanrahan**. I have to fall back on the Department's lawyers, but the Department's reading is that it is discretionary in the sense of maintaining to the extent necessary.

Mr. **Markey**. Where is the discretion?

Mr. **Hanrahan**. To the extent necessary to carry this out, the Secretary shall.

Mr. **Markey**. I didn't go to Harvard Law School, but "it shall" was kind of explained to me in the third grade as being different from "may," and that is kind of a fundamental distinction given to people at a very young age.

I don't see the discretion. Where is it?

Mr. **Hanrahan**. As I said, sir, it is in that portion which—that phrase which says to maintain a viable industry you shall do this. It doesn't say if it is our opinion that is is harmful to the industry or doesn't help the industry then we ought to do that. It doesn't ask us to do things which are harmful to the industry.

Mr. **Markey**. I understand what you are saying, but you see you are somewhat constrained by the four corners of this page to the extent to which you have some discretion in your determination as to what is good or bad. You have a law that you have to implement regardless of your own judgment as to the effect that it might have upon the so-called beneficiary, of the law.

I think the thrust of the law is to the beneficiaries. It is not—if it were just a simple action, but its purpose is to maintain a domestic industry in a viable condition and not simply to impose restrictions.

The thing is I think it is that phrase that makes it very important.

Mr. **Markey**. The point I am trying to make is the prescription has been laid out in law, and you have not been given as far as I can see in the letter of the law, perhaps the spirit is something else, and you can judge for yourself what the spirit of it is. But the letter of the law doesn't give you that ability to make that kind of determination.

Let me ask you another question. Why did DOE not submit DOE enrichment contract changes to Congress as prescribed by the Atomic Energy Act?

Mr. **Hanrahan**. I would ask Mr. Longenecker to address that.

Mr. LONGENECKER. Mr. Chairman, our determination was that the utility services contracts were consistent with the enrichment services pricing criteria that existed in January 1984, and, therefore, a criteria change was not required. We did, however, submit to Congress in December 1983, and again on January 18, 1984, a notice that we were going to issue the contract and a summary of the key features within it.

Mr. MARKEY. So you didn't think those changes constituted a change in criteria?

Mr. LONGENECKER. No, sir; I do not.

Mr. MARKEY. What would you consider to be a change in criteria if that was not a change in criteria? To what magnitude does a change have to take place before you are bound by the congressional mandate?

Mr. LONGENECKER. Things that are specifically prohibited, like import restrictions, as Mr. Hanrahan mentioned earlier. Specifically stated in the criteria is that after 1983 we shall not impose import restrictions on foreign uranium. Were we to reimpose restrictions, that would be a criteria change.

Mr. MARKEY. Did DOE publish its recent fiscal year 1986 price in the Federal Register?

Mr. LONGENECKER. No; we did not.

Mr. MARKEY. Why not?

Mr. LONGENECKER. The requirements in the enrichment pricing criteria and under the U.S. contracts provided for publication either in the Federal Register or otherwise, as appropriate. In this specific instance, we made the notification through letters to all of our customers.

Mr. MARKEY. So the customers know, but the public does not have an opportunity to review this price change, but the customers will.

Mr. LONGENECKER. Historically, we have made the price change known through the Federal Register. Our customers had explained to us that this was not a very effective means of communicating with them. This year, I testified on our price before another committee, it was widely carried in the press, and we felt that this constituted reasonable public notice.

Mr. MARKEY. Did you think about doing both? Was it too onerous a burden to have you notify your customers individually while simultaneously giving the public and the Congress and other people some opportunity to be able to have an indication as to what decision you have made?

Mr. LONGENECKER. We felt that a discussion of the price was adequately covered in the congressional hearings that we had, as well as the great deal of discussion that surrounded our competitive pricing strategy over the last year.

Mr. MARKEY. And you intend on that being your policy for next year as well?

Mr. LONGENECKER. Congressman, if you feel that our notification was less than adequate, we would certainly be willing to revisit the manner in which we notify Congress next year.

Mr. MARKEY. I think that would be very, very helpful, not just the Congress, but I think it would be very helpful if the public in general was given notice as to the changes or the recommendations which you make.

Let me move on to another area a little bit more controversial—the questions on South Africa. Dr. Clark, has DOE ever compiled data on which utilities import South African uranium?

Mr. CLARK. This point was covered in a question you sent up earlier in the week. The answer is yes, the Energy Information Administration, of which I am part, has published data on the source of uranium delivered to the Department of Energy for enrichment. We, at EIA, have not published any data on the subject we have collected directly, but we have relied on the Office of Uranium Enrichment to supply that information to us.

Mr. MARKEY. Does EIA have that information for 1984?

Mr. CLARK. For 1984, we have information on utilities' deliveries of foreign-origin uranium to the Department for enrichment, but we did not ask the utilities to identify the specific country of origin, only that it was foreign origin.

Mr. MARKEY. Why did you stop compiling this information? What policy decision did you make that you no longer wanted to know which companies, which utilities, were engaged in trade with these——

Mr. CLARK. Well, we, at the Energy Information Administration, had not collected this data on enrichment in the past. We had only reissued information that the Enrichment Office was responsible for. When the collection of such information was dropped by the Enrichment Office because there were no longer any controls on enriching foreign origin uranium, we added a question to our Energy Information Administration questionnaire to identify just the foreign fraction, but we did not see a need at the time, to identify the specific country of origin.

Mr. MARKEY. The Administrator of the Energy Information Agency responded in a letter to the subcommittee that EIA had "ceased compiling data on which utilities imported South African uranium" because it was viewed as an "unnecessary burden on the industry."

Furthermore, EIA staff, in response to an inquiry by the subcommittee staff on why the country of origin data was no longer collected said, "We quit collecting the data because it caused utilities so much grief. They called and complained that they were getting a lot of heat because of the newspaper attention."

I can understand that the utilities are getting a lot of heat because they are using uranium from South Africa. What I don't understand is why EIA has any concern that they are getting some heat because they are in fact engaging in that kind of trade transaction with a country engaging in apartheid. Why would it be your business to protect these utilities from that kind of public knowledge of the countries that they are trading with? What business is it of the EIA? Is this not public information that should be made available?

Mr. CLARK. I don't think it is the business of the EIA to protect anyone from heat.

Mr. MARKEY. They are being protected. You were compiling this information up until 1984, but as the flame has grown hotter down in South Africa, EIA's interests in compling this information has diminished accordingly.

Mr. **Clark**. Let me repeat that EIA was not compiling the information from its own records, but from records provided by another office. That information is no longer available. To be honest, I did not foresee a need to identify the particular country.

Mr. **Markey**. I would say that if you delete the question from the form, that of course the information is no longer going to be made available. But if you continue to seek the information and to gather it so that the public can be made aware of it, then it will be in the public domain.

Mr. **Clark**. We did not delete the question from the form. In fact, EIA added a question to identify foreign-origin uranium that was being delivered to DOE.

Mr. **Markey**. And is that information available?

Mr. **Clark**. It is available.

Mr. **Markey**. And will you compile that information and make it available so that the public can know which utilities in fact are engaging in contracts for uranium with South Africa?

Mr. **Clark**. Again, we don't have the identification of the specific country of origin for the DOE feed material. We don't have the data. We did not ask the question. We can change the form in the future, but at this stage for 1984, the information does not exist in our records.

Mr. **Markey**. Can you ask the question for 1985?

Mr. **Clark**. We certainly can.

Mr. **Markey**. Will you ask the question for 1985?

Mr. **Clark**. We will.

Mr. **Richardson**. Will the chairman yield?

Dr. Clark, is it not correct that 30 to 40 percent of our uranium imports come from South Africa?

Mr. **Clark**. That is about the right number. I think 26 percent was the number for 1984, something like that.

Mr. **Richardson**. Now, my good friend, Mr.——

Mr. **Clark**. Of the imports, not of the total.

Mr. **Richardson**. I do want to give you a chance to correct your statement. You did tell me that you were still collecting, and Dr. Clark says that you are no longer collecting.

Mr. **Hanrahan**. I apparently was mistaken. I thought we still were.

Mr. **Richardson**. It would seem to me that you probably should know whether he is collecting. With all due respect, it seems to me—you know, Dr. Clark, the entire Department professes to be vitally concerned with the domestic uranium industry. And many people make the claim, not just me, not just somebody who has a specific interest, that imports affect the domestic uranium industry. Yet there seems to be some ambivalence on the part of the Department to collect some of this data, and it just strikes me that there is a little bit of an inconsistency.

Let me ask you a question, Dr. Clark. Can I, Mr. Chairman?

Mr. **Markey**. You have my permission, yes.

Mr. **Richardson**. There have been some reports that EIA concealed—I don't want to use the word "coverup" but I will—specific data relating to the domestic uranium industry in the years 1981, 1982, 1983, and 1984. That is question 1.

Question 2: Did anybody at DOE ask you to give any projections related to the domestic uranium industry in EIA that perhaps showed the industry in a better light than it was?

Mr. **Clark**. No, sir. I have been involved since day one in EIA's participation in the viability decisions. We have never been asked to direct our forecasts one way, to change them after the fact. That has never been asked of us.

Mr. **Richardson**. What about unfair trade practices; has anybody at DOE or anybody at the State Department? The State Department wouldn't ask you to do this, that would offend the foreign country. Has anybody at DOE asked you to collect data on unfair trade practices by any country, be it South Africa or Canada or Australia or anybody?

Mr. **Clark**. We haven't been specifically directed to collect any such data. We have been provided some information, primarily by the U.S. uranium producers, all from public documents that purport to indicate subsidies or unfair trade practices. So far we have just maintained that data. We are not the experts, however, in deciding what constitues an unfair trade practice.

Mr. **Richardson**. Maybe the policy people——

Mr. **Clark**. We are holding the data in case it is requested later.

Mr. **Markey**. If I may reclaim my time, let me just finish my round of questions and then I will be glad to yield to you for another round. I would just like to finish up on the South African inquiry by saying that it is very difficult for Congress to make policy on trade and South African policy without the information that we have been requesting, and we are going to hold you to your promise to compile this information. I think that although contentions are being made to the contrary, there was a policy decision made to quit collecting this data, and I think it reflects very poorly upon the administration.

Let me just ask a couple of other questions in some other areas. What is DOE's goal in managing the enrichment program? Is the goal market share or is it managing costs efficiently in order to save the taxpayers money?

Mr. **Longenecker**. Mr. Chairman, there are two primary objectives. The first is to manage the program in a way that assures that we have a secure, competitive, indigenous supply of nuclear fuel in this country. The second is to operate in such a manner that we meet the cost recovery requirements of the Atomic Energy Act. More specifically, the objective recently has been to assure that the annual program outlays for uranium enrichment are met by customer's revenues on an annual basis.

Mr. **Markey**. You are in a difficult position because you want to remain competitive with foreign providers of enrichment services, but the mandate of the program to recover all costs would require you to bill the utilities for the $6 billion that is still uncollected in the capital costs and other attendant costs in constructing the program domestically.

So we have still got this outstanding $6 billion which is owed to the Treasury that the utilities have on their American Express Cards, essentially, that still goes uncollected. How do you reconcile maintaining this domestic Government-run program at the same time not admitting that it is a hidden susidy for the domestic nuclear industry, because they are not billed for the full costs?

Mr. Longenecker. Mr. Chairman, I would maintain that utilities are billed for the full costs. There is an important policy issue hidden in the question that you ask. It is, what is the debt that the commercial ratepayers should be expected to pay through the rates that we set over the next several decades? It is true that our net assets as shown in our 1984 financial statement are over $5 billion.

The question that has been asked is, are our assets really the debt? I would maintain that $5 billion was just the total value of all of our assets at that time, not the debt. We at DOE define the debt as the amount of outlays for the program provided by Congress in excess of the customer revenues that we received to offset them, for commercial purposes over the last 15 years. We think that number is several hundred million dollars. It is certainly not several billion. The key policy question, then, is whether Congress' intent was that the Department return the full value of all of our assets through the charges that we set for customers, and thus totally liquidate our assets. We would maintain that, de facto, we would be getting out of the uranium enrichment business.

Mr. Markey. The problem is that your numbers are contradicted by OMB and by GAO, and that is no light opposition. That is a significant indictment of the operation of this program, and the mechanism that you have instituted for the collection. I mean, this is basically a battle between you and OMB and GAO, but I think in terms of our credibility, that these are two groups that without question have some substantial credibility with Congress in terms of their evaluation of the deficiency in your collecting of the revenues owed to the Government.

Mr. Longenecker. Mr. Chairman, the difference primarily stems from the fact that the GAO believes the uranium enrichment debt is defined by assuming that our assets, including any assets that we bought, like the upgrades to the gaseous diffusion plants using customer revenues, become a portion of the debt.

We consider those as assets, just as a business would consider them as assets. But if we were a government program run with appropriated funds without offsetting revenues, those could, in fact, be a debt. So the policy question that I posed to you is one that goes back 15 years, regarding whether Congress, when it established enrichment as a special Government account in 1969, intended that imputed interest on enrichment assets should be returned annually to Treasury.

I would maintain that they did not, since Congress annually appropriated those offsetting revenues for capital upgrades and R&D. I believe GAO's report of last August reflects this. The problem with the repayment issue is that just 1 year ago we joined this issue. The enterprise had been operated, as you well know, for 15 years, with a mixture of civilian and military costs. Until 1983, the military didn't budget for its enrichment services, and defining the debt has that historical complexity.

It is both defining the split between civilian and military costs over the past 15 years, and attempting to define Congress' real intent when it established the special enrichment account, as to whether imputed interest was to be returned to Treasury annually that deserves thorough review.

Mr. Markey. Let me ask one final question. DOE announced recently that it was abandoning its gas centrifuge enrichment project. How much money did DOE spend on this project including imputed interest?

Mr. Longenecker. The total value was about $3.6 billion, and roughly $1 billion of that is imputed interest.

Mr. Markey. How much is the fiscal year 1986 price for enrichment services?

Mr. Longenecker. It is $125 per SWU, under the Utilities Services contracts.

Mr. Markey. Does that price include an element to pay back the Treasury for the money borrowed to build the now defunct gas centrifuge enrichment project?

Mr. Longenecker. There was no money borrowed, Mr. Chairman, to build the GCEP. The historical revenue shortfall that I mentioned earlier, or the several hundred million dollars in program outlays that revenues did not cover for civilian enrichment purposes over the last 15 years is in a variant, irrespective of the value assigned to the GCEP project. The $125 price does not include, per se, the GCEP as a productive enrichment facility, because it clearly is not. From our perspective, what we have done is to recognize that that the previously perceived GCEP asset will not produce enriched uranium and, thus, should be assigned a value of zero on our balance sheets for 1985.

Mr. Markey. That concludes my questions. Wtihout any further questions, we thank the winesses very much for their participation here today and we will move on to the final group of witnesses.

Mr. Markey. Mr. Edward Farley, Jr., chairman of the board and president of the Atlas Corp.; Mr. Raymond Larson of Uranium Resources, Richardson, TX; Thomas Neff, director, International Energy Studies Program, Massachusetts Institute of Technology; Mr. David Berick, director, nuclear waste and safety project, Environmental Policy Institute; Mr. John D. Selby, chief executive officer, Consumers Power Co. of Jackson, MI; Mr. James M. Friedman of Benesch, Friedlander, Coplan, and Aronoff, Cleveland, OH; and Mr. Nolan Hancock, citizenship legislative director for the Oil, Chemical, and Atomic Workers Union.

At this point I would like to stop and ask unanimous consent to insert in the record a staff memo on the subject that was being discussed by the last panel of witnesses. Without objection, that will be so ordered.

[The memorandum follows:]

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October 8, 1985

MEMORANDUM

TO: Edward J. Markey, Chairman and Members of the Subcommittee
FR: Subcommittee Staff
RE: Imports of uranium from South Africa by U.S. utilities

Several U.S. nuclear utilities rely on South Africa for some of their nuclear fuel supplies, the Energy Information Administration (EIA) reported to the Subcommittee. The EIA reports, covering 1977-1983, indicate that South Africa has been a regular supplier of uranium to domestic utilities over the past eight years, and their share of the United States utility market has grown dramatically since 1977. Moreover, the EIA reported that their survey of future import commitments reveals that South Africa will continue to supply over one-third of the uranium used by domestic utilites through the rest of the century.

In addition, the Administrator of the Energy Information Administration responded in a letter to the Subcommittee that EIA had ceased compiling data on which utilities imported South African uranium because it was viewed as "an unnecessary burden on the industry." Furthermore, EIA staff, in response to an inquiry by the Subcommittee staff on why the country of origin data was no longer collected, responded that, "We quit collecting that data because it caused the utilities so much grief. They called and complained that they were getting a lot of heat because of the newspaper attention."

In 1977, 6 utilities (Baltimore Gas & Electric; Carolina Power & Light; Consumers Power; South Carolina Electric & Gas; Southern Company Services; and Yankee Atomic) imported nearly 312,000 pounds of uranium from South Africa. The percentage of South African uranium out of each utility's total deliveries was less than 10%.

By 1982, 6 utilities were still importing from South Africa -- Consumers Power (172,000 pounds); Louisiana Power & Light (106,000 pounds); Mississippi Power & Light (1,532,000 pounds from S. Africa and Canada); Northern States Power (156,000 pounds); Tennessee Valley Authority (640,000 pounds from S. Africa, Canada and Australia); and Virginia Electric (378,000 pounds from S. Africa and Canada). However, the amount they imported grew dramatically. In 1982, these utilities used South African uranium to meet approximately one-third of the fuel supplied to DOE, by importing a staggering 1.784 million pounds of uranium.

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Estimate of South African uranium supplied to DOE, 1977-82

Domestic Utility	Pounds of Uranium Delivered '77-82
Baltimore Gas & Electric	540,000
Carolina Power & Light	612,000 (S. Africa, France)
Consumers Power	520,000 (S. Africa, France)
Duquesne Light	44,000
Louisiana Power & Light	106,000
Mississippi P&L	1,532,000 (S. Africa, Canada)
Northern States Power	450,000 (S. Africa, Unknown)
S. Carolina Electr & Gas	86,000
Southern Company Services	220,000 (S. Africa, Canada)
System Fuels	224,000
Tennessee Valley Authority	756,000 (S. Africa, Canada, Austr)
Virginia Electric	580,000 (S. Africa, Canada)
Yankee Atomic	256,000 (S. Africa, Canada)

In 1983, South Africa supplied 46 percent of the total foreign uranium delivered to DOE enrichment facilities. The 2.0 million pounds of uranium supplied to eight United States nuclear utilities for DOE enrichment represents 46% of the 4.4 million pounds of foreign-origin uranium delivered to DOE for enrichment in 1983.

Imports of South African Uranium delivered to DOE facilities (Thousands of pounds of uranium)

	1977	1978	1979	1980	1981	1982	1983	1984
S. Africa	312	212	604	78	444	1,784	2,038	???

Most significant for the future of U.S. utilities reliance on South African uranium was this finding. EIA reported that "For import commitments for delivery in the period 1984-2001, . . . 35 percent [will be] of South African origin." This figure reflects EIA's survey of contracts signed this year for long-term commitments. It means that domestic reliance on South African imports is likely to remain stable or grow if contracts are honored.

The following utilities imported all or part of the following totals from South Africa in 1983:

Estimate of South African uranium delivered to utilities, 1983

Domestic utility	Pounds of Uranium	% Total Uran.
Carolina Power & Light	>718,000*	74
Consumers Power	8,000	20
Maine & Vermont Yankee	186,000	76
Northern States Power	>476,000*	68
Ohio Edison	>332,000*	69
Texas Utilities	330,000	19
Tennessee Valley Authority	>832,000*	75
Virginia Electric Power	>498,000*	57
Total	2,038,000	

* EIA reports some totals for imports as originating from more than one country, i.e. "Canada, South Africa." It is impossible to ascertain what share represents South African imports. However, the total figure indicates that approximately half of the figure which is attributed to South Africa and other countries belongs to South Africa.

Unfortunately, the above table is not available for 1984 because it appears that EIA did not want to embarass the utilities by collecting such data. In response to a letter from the Subcommittee on why this data was not now available, Dr. H.A. Merklein, Administrator of the Energy Information Administration, explained, "The Department quit collecting the specific country-of-origin data after 1983 . . . . When the EIA began collecting data in 1984 on use of uranium imports, we felt the utilities' specification of country of origin to be an unnecessary burden on the industry, since we have no requirement for such detail. The EIA does not currently plan to collect and publish country-of-origin data in the future." As mentioned earlier, EIA staff involved with the compilation of this data revealed, "We quit collecting that data because it caused the utilities so much grief." The result of this decision is that no one can now determine the level of imports from South Africa to particular utilities and how these utilities are influenced by their dependence on South Africa to meet their nuclear fuel needs.

Mr. **Markey**. We welcome you to the subcommittee and apologize for the lateness of the hour. We ask that each of you please make all attempts to keep your initial testimony within the 5-minute limit that is maintained by the subcommittee for the purpose of allowing the maximum time possible to be made available for subcommittee members to question panelists.

If the ground rules are understood, I think that we can commence the panel. We will begin with Mr. Farley, chairman of the board and president of the Atlas Corp. We welcome you and ask your cooperation.

STATEMENTS OF EDWARD FARLEY, PRESIDENT, ATLAS CORP., ON BEHALF OF THE URANIUM PRODUCERS OF AMERICA; THOMAS L. NEFF, DIRECTOR, INTERNATIONAL ENERGY STUDIES PROGRAM, MASSACHUSETTS INSTITUTE OF TECHNOLOGY; JOHN D. SELBY, PRESIDENT, CONSUMERS POWER CO.; RAY LARSON, PRESIDENT, URANIUM RESOURCES, INC.; JAMES M. FRIEDMAN, PARTNER, BENESCH, FRIEDLANDER, COPLAN & ARONOFF; AND NOLAN W. HANCOCK, LEGISLATIVE DIRECTOR, OIL, CHEMICAL & ATOMIC WORKERS INTERNATIONAL UNION

Mr. **Farley**. I will do my best, Mr. Chairman. My name is Edward Farley. I am chairman and president of Atlas Corp., which has been in the uranium-producing business for over 30 years, and so have I, and I am executive vice president of the Uranium Producers of America, and I speak on behalf of both of those organizations.

Mr. Chairman, I just want you to know that I am a New York Giant baseball rooter, and that team disappeared 25 years ago, so I am trying not to be consistent and have my industry disappear now.

Mr. **Markey**. But as you well know, the Giants did not disappear. They just left New York and came up in another part of the country. What we are afraid of is that the same kind of effect will occur as you push down on the heads of us in Boston, the concomitant benefits to other parts in the country.

Mr. **Hall**. Could we ask about the Bobby Thompson hit while you are on that?

Mr. **Markey**. Were you there? Were you one of the three million people from New York in the Polo Grounds when Bobby Thompson hit his home run?

Mr. **Farley**. No, I have to tell you I was born and raised in Staten Island, and so was Bobby Thompson. My wife, who is this pretty blond lady sitting here, lived around the corner from Bobby when he hit the home run.

Mr. **Hall**. But she was a little-bitty girl.

Mr. **Farley**. Mr. Chairman, the domestic uranium industry is dying, and is in fact almost dead, and I could recite figures for you on employment, investment, and capital expenditures or the lack thereof, the lack of any further exploration drilling, and the fact that our price was $40 a pound a few years ago and it is now $16. There were 24 mills operating not too long ago in this country, now there are three, none of them operating at full capacity, and one of them owned 80 percent by the French Government.

I would also point out that at a price of $16 a pound, this country has no reserves of uranium. We have zero reserves.

At long last, as you know, the Secretary of Energy on September 27 determined that we were not viable. We have been saying that for several years.

Let's talk about domestic demand and domestic production. There are 92 nuclear plants now operating in this country and that number will increase to about 120 by the end of 1990, and they supply at least 15 percent of our domestic electricity.

At this time our nuclear powerplants in existence require 33 million pounds of U^{308} each year, and that number will increase to at least 40 million pounds by 1990, and this doesn't include our military requirements, which have been estimated to be about 10 million pound annually.

As to domestic production, in 1980 we produced over 43 million pounds. We will produce less than 8½ million pounds this year, and that number will be lower next year.

There are three basic reasons for the almost complete demise of our industry, and each of them in our judgment requires correction:

One, there is subsidized and unfair competition from foreign imports.

Two, there is unfair competition from our own Department of Energy.

Three, unfair legislation which places on our industry solely and retroactively the enormous cost of stabilizing our tailings piles, even though almost all of those piles were created in accordance with the then existing laws during a time when it was not recognized that they created a potential health hazard and had to be stabilized.

Let me talk about each of these causes. As to unfair and subsidized foreign imports, in the last 2½ to 3 years almost all purchases by domestic utilities have been of uranium produced abroad, and I am talking about a figure of over 90 percent. Approximately 60 percent of the uranium imported into the United States comes from Canada. Most of the remainder is from South Africa.

I want to take a particular look at Canada, because I know of the chairman's interest in it. As to Canada, both the Canadian Federal Government and its Provinces are heavily involved in the Canadian uranium-producing industry and they subsidize that industry in the following ways:

Some of the principal producers are owned by the Canadian Government, such as Eldorado, or by the province of Saskatchewan, such as Saskatchewan Mining Development Corp.

As a result of such ownership, these companies pay no Canadian or Federal taxes, and we do. In the last several years, Government-owned producers and other Canadian producers have been subsidized to the extent of over $1 billion by the following actions of the Canadian and Provincial governments: Making contributions of uranium from the Canadian Government's stockpile; making or guaranteeing long-term loans; providing low-interest and no-interest loans; forgiving loans; making equity advances; providing prepayment of the purchase price for uranium by the Canadian utility which is owned by the Province of Ontario.

In addition to these, the Canadian Government has the following policies which help its producing industry and affects ours adversely.

It allocates higher cost Canadian production to the Canadian market, thus freeing subsidized surplus Canadian production for dumping in this country at cut-rate prices, excluding United States producers from the Canadian market; restricting United States ownership of Canadian natural resources to less than 50 percent; enacting an upgrade in Canadian policy, under which all buyers of Canadian uranium are required to convert that uranium into uranium hexaflouride at the Canadian conversion faciity owned by the Canadian Government.

I might say that such product tie-ins have long been regarded as unfair. Also, reviewing and controlling the terms and prices of uranium export contracts. All of these matters are documented.

The situations as to other countries is comparable to that faced by United States producers as to Canada. South Africa, which produces uranium in Namibia, and as a byproduct of gold production in South Africa, itself markets its uranium through a government corporation called Nufcor.

South African uranium is available at a relatively low price, not because that country enjoys better grade ores than we do, but because it assigns its costs of production to gold rather than to uranium.

The wisdom of our Nation's continuing to rely on South Africa for any of our uranium needs either currently or in the relatively near future needs no further comment from me.

Second, as to unfair competition from our own Department of Energy, the enrichment policies of that Department initially created a glut of uranium.

Now that Department is trying to work off that glut in a way that does the Federal enrichment business the least harm, but in doing so, the Department has reduced drastically the demand for domestic uranium.

It has done this mainly through its new enrichment contract, which restricts the ability of its customers to choose to supply more uranium and to require fewer enrichment services, even if to do so would be to the economic benefit of the customers.

Outside experts have, in fact, estimated that through all the new mechanisms in the DOE's new enrichment contract, it has decreased the demand for U^{308} by 50 to 100 million pounds over the next 5 to 10 years.

This is a death knell for many domestic producers, and several have, in fact, folded their tents and left our industry since this new contract was issued earlier.

In effect, the DOE, through its enrichment operations, is transferring demand for U^{308} from the private sector. By its new enrichment contract, DOE is shutting down the very industry it is obligated and supposed to preserve.

Both Canada and Australia, another important potential seller to the United States of uranium, bar sales of uranium for military purposes.

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Australia, like Canada, controls it prices, restricts foreign ownership, and flirts with phasing out uranium production entirely for political reasons.

Like Canada, France does not permit United States uranium producers to sell their uranium for use there. Broadly speaking, all major foreign uranium-producing countries review and determine export prices and terms or actually market their uranium through government agencies.

In the past, these foreign governments sanctioned the formation and operation of the uranium cartel, the purpose of which was to restrict and allocate production and to raise prices. It is impossible for domestic producers to compete against the terms and pricing offered for foreign uranium.

Third, tailings—a third factor contributing to the depressed condition of the domestic uranium-producing industry is heavy expense associated with stabilizing existing active tailing piles as required by current law.

Mr. **Markey**. We are going to have to ask you to submit your written testimony for the record, and I am sure we will give you more than ample opportunity on questions to make the rest of your points.

[Testimony resumes on p. 221.]

[The prepared statement and attachments of Mr. Farley follow:]

STATEMENT OF MR EDWARD FARLEY
ATLAS CORPORATION
ON BEHALF OF THE
URANIUM PRODUCERS OF AMERICA

HEARING BEFORE THE SUBCOMMITTEE ON
ENERGY CONSERVATION AND POWER
HOUSE COMMITTEE ON ENERGY AND COMMERCE

October 8, 1985

The Non-Viable Status of the Domestic Uranium Industry: Causes and Cures

Mr. Chairman and members of the Subcommittee, my name is Edward R. Farley. I am Chairman and Chief Executive Officer of Atlas Corporation, which owns a uranium mill and associated mines in the Moab, Utah area. I have been affiliated with Atlas and involved with the domestic uranium industry for over 30 years. I am appearing today on behalf of the Uranium Producers of America, a recently formed trade organization of domestic uranium companies. I greatly appreciate this opportunity to discuss the status of our industry, the problems we face, and the actions necessary to address these problems.

I. The Status of the Domestic Uranium Industry

Mr. Chairman, the domestic uranium industry is deeply depressed. Employment within the industry has nose-dived from more than 22,000 workers in 1981 to less than 2000 today. U.S. uranium production has dropped to less than 10 million pounds per year -- only about one-fourth of U.S. civilian nuclear requirements. Only three of 25 mills are in operation. More personally, my company was forced to suspend operation at its Moab facility in early 1984, laying off several hundred employees. This is not an easy thing to have to do, and it has a very harsh effect in a small community such as Moab.

The future is equally bleak. The Energy Information Administration in its September report on uranium industry viability indicates that imported uranium accounted for one-quarter to one-half of U.S. requirements in 1982-84,1/ and that this share of the market will increase to 60 to 70% by the early 1990's.2/ Independent consultants suggest that the situation will be even worse. Colorado Nuclear Corporation, an independent consulting firm which devised DOE's computer model

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1/ EIA, Domestic Uranium Mining and Milling Industry, 1984 Viability Assessment xvi (Sept. 1985) (51.7% in 1982; 25.9% in 1983; 37.4% in 1984) (in 1982, large amounts of uranium from the Canadian government stockpile entered the United States).

2/ EIA, *supra*, at xvii.

for the uranium industry, forecasts that, absent a change in government policy, the share of the U.S. market supplied by domestic producers will continue to decline, both absolutely and relatively, through the turn of the century.[3] CNC's projections show the market remaining to be supplied by the domestic uranium industry as limited to only a few million pounds per year. In confirmation, almost all new contracts for uranium by U.S. utilities are for foreign-origin material. In short, the plain fact is that our domestic uranium industry is disappearing.

II. Causes of the Problem

There are two major contributing factors to the collapse of the domestic uranium industry. The first is U.S. government uranium enrichment policies, which in turn are linked to an overprojection of the construction of new nuclear power plants. The second is the rising tide of unfairly-traded imported uranium.

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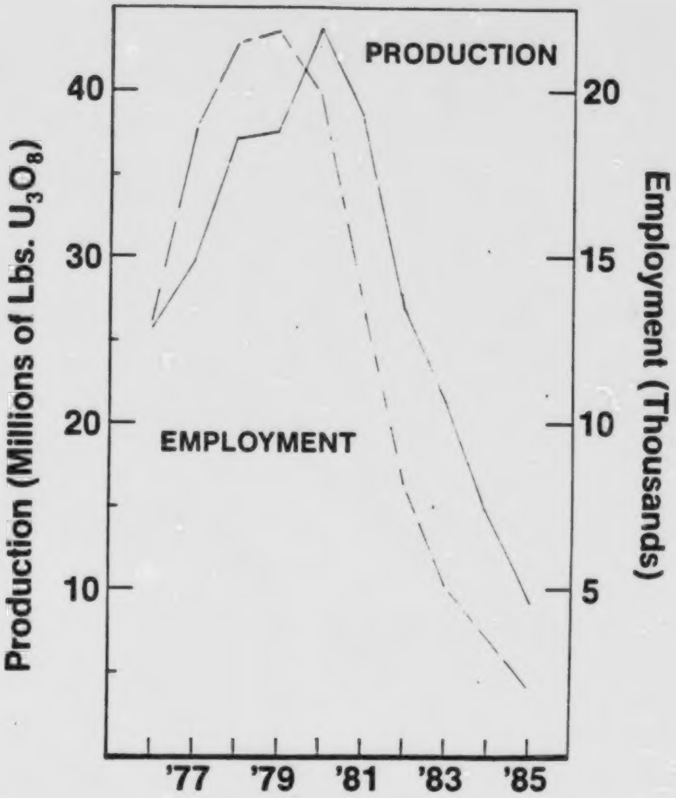
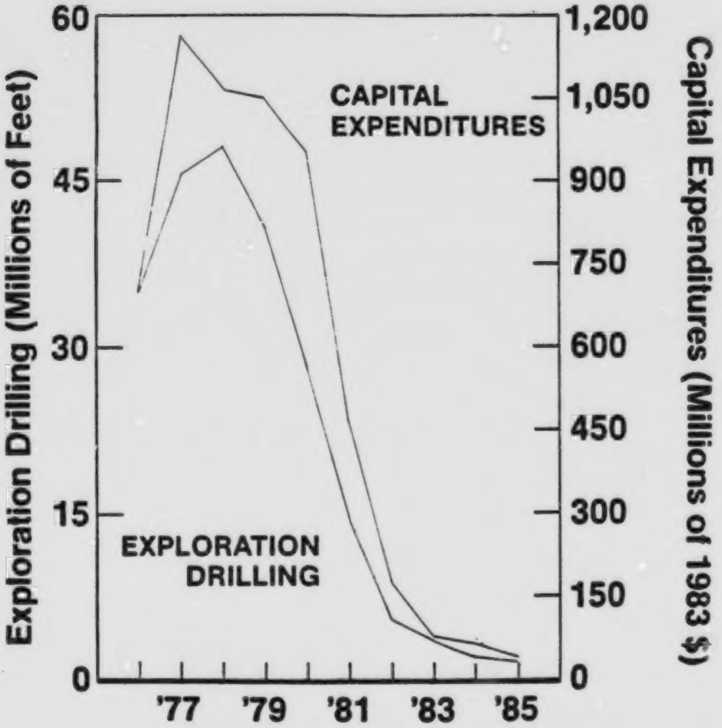
[3] CNC, Review and Critique of "United States Uranium Mining and Milling Industry: A Comprehensive Review" (Sept. 1984).

KEY ECONOMIC INDICATORS — U.S. URANIUM INDUSTRY



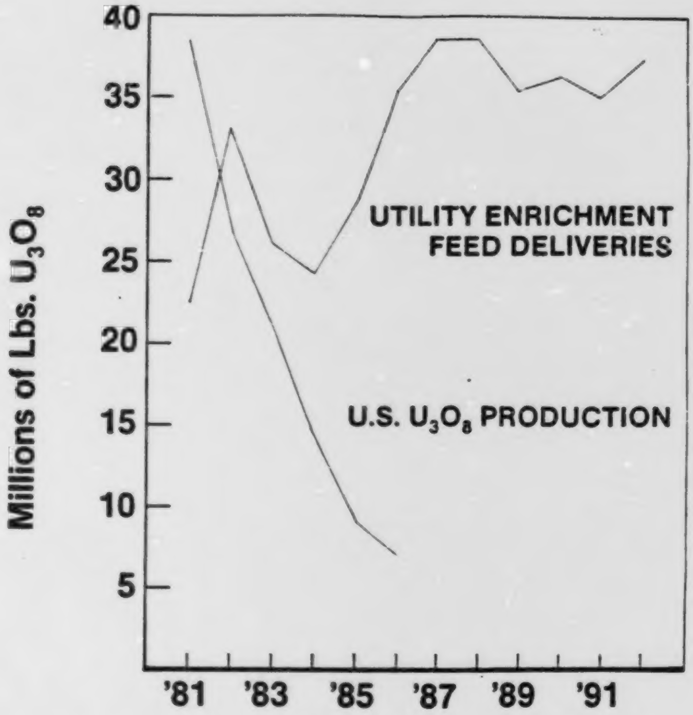
Sources: U.S. Dept. of Energy; 1984-85 estimated.

KEY ECONOMIC INDICATORS — U.S. URANIUM INDUSTRY



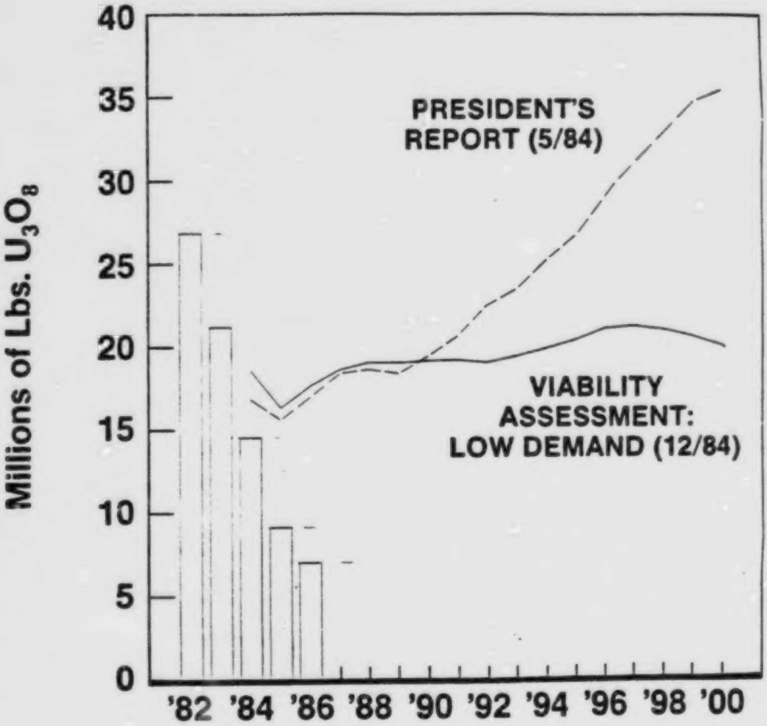
Sources: U.S. Dept. of Energy; 1984-85 estimated.

U.S. URANIUM PRODUCTION AND ENRICHMENT FEED DEMAND



Sources: U.S. Dept. of Energy; 1984-86 U_3O_8 production estimated.

ACTUAL U_3O_8 PRODUCTION AND EIA PROJECTIONS



Sources: U.S. Dept. of Energy; 1985 and 1986 production estimated.

A. Government Enrichment Policies

Nuclear fuel is a combination of enrichment services and uranium. The U.S. government, first through the Atomic Energy Commission and then, through its successors, ERDA and DOE is the exclusive domestic source of uranium enrichment. U.S. government enrichment policies undeniably have a profound impact on the demand for, and price of, uranium. DOE stands in a position of monopoly power with respect to the domestic uranium industry through the agency's control over enrichment.

During the 1970's, the Atomic Energy Commission and its successors, ERDA and DOE, projected a rapid expansion in nuclear generating capacity,4/ and followed policies which served to encourage the development of foreign enrichment facilities.5/ These policies also required the utility industry to contract for enrichment services far in advance of need.6/

4/ See Uranium Enrichment: Heading for the Abyss, 221 Science 730, 731 (1983).

5/ In particular, the AEC "closed the order books" in 1975 on new enrichment contracts for foreign utilities. This spurred development of foreign enrichment facilities. See Radical Surgery In Uranium Enrichment, 228 Science 1407 (June 21, 1985); Uranium Enrichment Policy, Hearing before the Energy Research and Development Subcommittee of the Senate Energy and Natural Resources Committee, 95th Cong. 2d Sess. 43 (1978).

6/ AEC, for example, adopted the so-called long term fixed commitment contract for enrichment purposes. See generally Proposed Changes in AEC Contract Arrangements for Uranium Enriching Services, Hearings before the Energy Subcommittee of the Joint Committee on Atomic Energy, 93d Cong., 1st Sess. (1973).

This forced utilities also to contract for uranium well in advance of when it was needed. When installed nuclear capacity grew much more slowly than expected, a glut of stockpiled uranium and enriched uranium built up.7/

This glut has had an obvious depressing effect on domestic uranium producers. The stockpile overhang and competition from new foreign enrichers also has put pressure on DOE to revise its enrichment policies. In response, DOE in early 1984 issued a new generic enrichment contract. This contract, which was worked out with DOE's customers, was prepared and issued without the input of the domestic uranium producing industry and without the prior congressional review required under the Atomic Energy Act. 8/ The new contract contains a number of features which further reduce demand for uranium.9/ Outside experts have in fact estimated that DOE's new enrichment contract decreases demand by 50,000,000 to 100,000,000 pounds over the next 5 to 10 years.10/ This is a death knell for many domestic

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7/ The effect of the federal government's policies was predicted by Vince Taylor in *How the U.S. Government Created the Uranium Crisis (And the Coming Uranium Bust)*, June 1977, reprinted in *Hearing before the Energy Research and Dev. Subcomm. of the Senate Energy and Natural Resources Comm.*, 95th Cong. 2d Sess. 143 (1978).

8/ *See* Affidavit of Larry A. Boggs, attached as Exhibit A.

9/ Some of these features are discussed in Letter, Mr. Stevens to Mr. Hodel, January 10, 1984 attached to Boggs Affidavit.

10/ *See*, *e.g.*, Nuclear Resources International, DOE Enrichment Policies and the U.S. Uranium Industry (Sept. 1984) (Exhibit B).

producers, and several have folded their tents and quietly expired since DOE adopted its new policies.

While the domestic uranium industry of course recognizes the need for DOE to revise its enrichment policies, many producers feel that the revision should have -- and could have -- been accomplished in a fashion less harmful to an already rapidly deteriorating domestic producing industry.

B. Imports

An even more significant problem has been the rapid increase in commitments for importation of foreign source uranium. Approximately 50 to 60% of these imports are from Canada. Almost all the remainder are from South Africa. I will focus first on Canada. While it is true that ore grades in Saskatchewan are very attractive, the U.S. industry generally stands in a better position than Canada's Ontario producers. The flood of Canada imports arises not from a competitive advantage enjoyed by the Canadians generally, but from heavy government subsidies and supports for the Canadian uranium industry. Let me dwell on this in some detail. Major portions of the Canadian uranium industry are government-owned.11/ Canada

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11/ Eldorado Nuclear Limited has long been owned by the Canadian government. The Province of Saskatchewan owns the Saskatchewan Mining Development Corporation (SMDC).

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has heavily subsidized its uranium industry to the tune of more than a billion dollars.12/ To make matters worse, Canadian uranium is being offered on the U.S. market at prices far below the price at which it is sold on the Canadian home market and, we believe, to other countries as well. More specifically, the principal Canadian nuclear utility is paying more than $60 per pound for uranium this year,13/ while Canadian uranium is being sold, and offered for sale, in the U.S. in the $15-18 range.14/

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Government-owned Canadian companies are major participants in virtually all Canadian uranium projects. The remainder are financed in large part by the Province of Ontario through Ontario Hydro.

12/ Eldorado in recent years has received an approximately $300,000,000 in uranium from the Canadian government stockpile in return for stock. A $100,000,000 loan to an Eldorado subsidiary was forgiven and a gain of roughly $25,000,000 was realized. See Eldorado's 1981 Annual Report at 2 and 25. The Province of Saskatchewan has provided approximately $250,000,000 in equity advances to SMDC and has also provided or guaranteed certain long-term debts of SMDC. SMDC 1983 Annual Report. Ontario Hydro (owned by the Province of Ontario) has advanced Denison and other Canadian uranium producers in excess of $600,000,000. See, e.g., Wall St. J., Oct. 8, 1981 ($600,000,000 interest free loan to Denison and Rio Algom); Nuclear Fuel, Jan. 4, 1982 ($600,000,000 plus); Nuclear Fuel, March 28, 1983 ($600,000,000 at one project).

13/ See, e.g., Nuclear Fuel, July 1, 1985 at p. 2, Nuclear Fuel, June 18, 1984, at pp. 4-5. (Exhibit C). The price paid by Ontario Hydro is actually $10.00 to $20.00 higher than reported in Nuclear Fuel because Ontario Hydro is also "recovering" its heavy cash advances (see note 12) as it takes delivery of its uranium.

14/ See Exhibit D.

This is a prima facie case of "dumping" -- a practice which is unlawful under U.S. trade law and under GATT. This situation is further compounded by tax benefits granted to, and direct government participation in, the nuclear utility business in Canada.

The Canadian government provides further support to its producers through market allocations and exclusion of U.S. producers. More specifically, Canada imposes a 100% domestic content requirement. U.S. producers cannot compete against this kind of government orchestrated and subsidized "competition."

The situation with respect to South Africa is somewhat different, but equally a problem. The bulk of the South African production comes either from Namibia, where it is produced in contravention of a U.N. resolution,15/ or as a coproduct of the country's gold-mining operations. South Africa allocates virtually all its costs to gold production, leaving it free to sell its uranium at low prices. However, the uranium content in the gold ore South Africa is mining is relatively very low and the ore is located at such a depth that we believe it would otherwise be uneconomic to mine, even under the Apartheid system. To further complicate matters, South Africa

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15/ *See* United Nations, Plunder of Namibian Uranium: Major Findings of the Hearings on Namibian Uranium Held by the United Nation's Council for Namibia (July 1980).

markets, prices, and allocates its uranium through a government corporation, Nufcor.

Mr. Chairman, our uranium mines and mills cannot be kept on suspended status indefinitely. First, that costs money -- money which is a total loss when no uranium is being produced. Second, eventually federal and state reclamation laws will be applied. Mills will be decommissioned and licenses terminated.16/ Mines will be flooded. And once mines are flooded, it is dangerous, expensive, and in many cases likely impossible to recover any reserves remaining in those mines. Within a few years, this Nation risks the loss of its domestic uranium capacity.

The loss of a viable domestic uranium industry should be an important source of concern. At the personal level, there is obviously the concern one must feel for the 20,000

16/ See CNC, note 3, at p. 30:

> "'excess' production capability will rapidly erode as producers shut down facilities and enter into decommissioning and reclamation as directed by the state and federal regulations which govern uranium production facilities. It is highly doubtful that the state authorities will allow the open-ended shutdown of uranium mines and mills. Pressure will be applied to decommission and reclaim after a relatively short period of inactivity."

unemployed and displaced uranium miners and their families, and the disruption to the small western communities where this is most felt. This is particularly alarming when it is brought about by unfair foreign practices and ill-considered policies in DOE's enrichment program. However, broad interests of national security and energy independence are also involved. Dependable and assured energy supplies are fundamental to our economy and our national security. The United States depends on nuclear energy for some 14 percent of its electrical energy needs. The percentage is much higher in many of our states, including those of New England. Moreover, the percentage is on the increase and will continue to increase at least through the turn of the century, when it will reach 20% or more.

A secure and reliable supply of nuclear fuel is essential to supply our Nation's needed electrical energy. Dependency on foreign sources of supply does not compare favorably with the security of domestic supply. Some foreign sources, such as South Africa and Namibia, are in politically unstable regions of the world.17/ DOE has in the past indicated that foreign

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17/ In the words of Robert Rich, until recently the nuclear fuel manager for the Yankee utilities,

> "When one considers that well over half of the western world's uranium resources are in areas that have been commonly characterized as politically unstable, there's a

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production is subject to embargoes and cartel pricing.18/ This is not a hypothetical threat. Canada actually embargoed export contracts at one point in the 1970's.19/ Congress has already investigated evidence of a foreign uranium cartel sponsored by foreign governments in the 1970's.20/ And Australia flirts with cutting off uranium production.21/ Under these circumstances, it is clearly ill-advised to develop a dependency, and especially the heavy dependency to which we are headed, on foreign sources of supply.

Congress in the past has recognized that the nuclear fuel cycle must be viewed as a whole, of which the uranium component is an integral and vital part.22/ This recognition is, we

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> large potential for market disruption by political events." Nuclear Fuel, Feb. 11, 1985, at p. 8.

18/ DOE, The Domestic Uranium Industry and Imports of Uranium 36-37 (Feb. 23, 1981).

19/ Nuclear Fuel, July 11, 1977, p. 9; August 8, 1977, p. 1; January 9, 1978, p. 1.

20/ *See* Hearings before the Subcommittee on Oversight and Investigation of H. Comm. on Interstate and Foreign Commerce (1976-78) ("Moss Hearings").

21/ Nuclear Fuel, 7/30/84 p. 11.

22/ In the words of the Joint Committee on Atomic Energy,

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believe, manifestly proper. If the nation loses its uranium industry, the nuclear option is a house without a foundation.

IV. DOE and a Viable Domestic Uranium Industry

A. Section 161v.

Mr. Chairman, Section 161v. of the Atomic Energy Act already requires DOE to "assure the maintenance of a viable domestic uranium industry."23/ DOE and its predecessors have acknowledged in the past that they have authority under this and other provisions in the Atomic Energy Act to limit importation of uranium or enriched uranium during periods of limited demand -- precisely the condition currently faced by domestic producers.24/ The AEC indeed testified that relief under

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> "the maintenance of a viable domestic uranium industry is an integral part of a sound nuclear industry..." 1964 U.S. Code Cong. & Admin. News 3132.

The Joint Committee also noted that assurance of a viable domestic uranium industry is

> "in the national interest since this industry is related to our national defense and security." Id. 3121.

23/ 42 U.S.C. §2201(v).

24/ DOE's predecessor testified in 1963 and again in 1974 that for purposes of assuring the viability either of the domestic

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Section 161v. was the desirable means to deal with uranium issues since this was the statute specifically designed for that particular commodity.25/ Trade Representative Yeutter has recently indicated that implementation of section 161v. will not violate GATT.26/ If the domestic industry is to be salvaged, the Department of Energy should immediately implement an appropriate set of limitations on importation of foreign uranium and such limitations should remain in place at least until the market can recover from the huge inventories spawned by previous policies.

Unfortunately, section 161v. has been honored chiefly in the breach. DOE has long sought to avoid implementation of the section. Indeed, in recent regulations issued to assess

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uranium industry or DOE's own enrichment business, the Atomic Energy Act authorizes imposition of restrictions on the importation of both natural uranium ("source material") and enriched uranium ("special nuclear material") in the form of conditions on the import licenses required by the Atomic Energy Act for all such imports. _See_, _e.g._, Private Ownership of Special Nuclear Materials, Hearings before the Subcomm. on Legislation of the Jt. Comm. on Atomic Energy, 88th Cong., 1st Sess. at 30 (General Counsel Hennessey); Proposed Modification of Restrictions on Enrichment of Foreign Uranium for Domestic Use, Hearings before the Joint Comm. on Atomic Energy, 93rd Cong., 2d Sess. 8 (1974); _Id_. at 233 (AEC letter).

25/ 1974 Hearings at 8-9.

26/ Letter, Mr. Yeutter to Congressman Udall, July 15, 1985, p.2, answer to Q.2.

viability, the agency went so far as to define a "viable uranium industry" as only that industry, if any, needed to supply increased demand resulting from a disruption of imports, after stockpiles are taken into account.27/ But DOE has finally had to admit -- in a decision issued September 26, 1985 -- that even under this strained concept of viability our domestic industry was non-viable in 1984. Today, in 1985, our domestic industry is in an even worse condition. The agency is nevertheless unwilling to impose any limitations on enrichment of foreign source uranium. In Secretary Herrington's letter to President Reagan and to Trade Representative Yeutter, and in the DOE press release announcing the decision that the domestic uranium industry is non-viable, it is obvious that DOE has gone to great pains to evade its obligation under section 161v. We believe that DOE is legally obligated to impose such limitations, or to provide comparable relief. Moreover,

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27/ See 48 Fed. Reg. 4546 (Oct. 6, 1983). DOE has acknowledged that its viability regulation "conceives of a viable domestic uranium industry as an industry capable of meeting increases in demand if there is some unspecified import disruption after you take stockpiles into account." Review of the Status of the U.S. Domestic Uranium Mining and Milling Industry, Hearing Before the Subcom. on Energy Res. and Dev. of the Senate Comm. on Energy and Natural Resources, 98th Cong. 2d Sess. 51 (1984). Under DOE's regulation, as the market for uranium shrinks, the industry becomes more viable. See, e.g., 1983 Viability Assessment by DOE at xi, 68, 77 & App. F. at p. 180 (the lower the demand, the more able industry is to meet supply disruption and thus the more viable). This is an absurd concept of viability and turns the notion on its head.

implementation of section 161v. is urgently needed to address the numerous unfair trade practices to which I have already referred.

DOE should also do more to expand demand for domestic uranium under its enrichment program. A prime example involves the so-called "variable tails" issue. The current enrichment contract, which was recently declared null and void by the United States District Court for Colorado as violative of certain requirements of the Atomic Energy Act, limits and penalizes an enrichment customer's selection of tails assay.28/ This has the effect of increasing demand for enrichment services and reducing demand for uranium by 3 to 5 million pounds per year -- an amount equivalent to the output of several good-sized uranium mills. It is our understanding that DOE at the same time planned to operate its enrichment plants29/ so as to require supplemental feed from the government stockpile. In effect, the DOE contract transfers uranium demand from the private sector to DOE. This may assist the agency in holding down its costs,30/ but it is a tough pill to require beleaguered

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28/ The "tails assay" is the amount of U-235 remaining in "depleted" uranium after enrichment. A tails assay of 0.35 means 0.35% U-235.

29/ See, e.g., DOE Interim Operating Scenarios (Exhibit F).

30/ DOE has specifically noted that the principal reason it is contemplating distributions from the government stockpile

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uranium producers to swallow.

DOE on September 26 for the first time finally acknowledged that its enrichment contract is reducing demand for uranium. However, the agency is offering only very limited relief from its penalties and restrictions on free choice of tails assay and only one year of relief from its policy of government stockpile distribution. Much more is required.

V. What Should Be Done?

Mr. Chairman, we are currently at a crossroads. DOE's enrichment contract has been declared unlawful. DOE has finally acknowledged that the domestic uranium industry is non-viable. We need strong leadership to put the U.S. nuclear fuel industry back on track. I can assure you that the domestic uranium industry is ready and eager to cooperate in such an effort. But we believe that any such effort must take into account the fact that the U.S. nuclear fuel industry is comprised not just of the government's enrichment business but also of a private

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(i.e., so-called "split-tails" operations) is to subsidize its enrichment price under its new contract. See Review of the Status of the U.S. Domestic Uranium Mining and Milling Industry, Hearing Before the Energy Research and Dev. Subcomm. of the Senate Energy and Natural Resources Comm., 98th Cong., 2d Sess. at 48 (1984). DOE is valuing the stockpile uranium at only $9.00 per pound -- a fraction of the already extremely depressed spot market price.

uranium industry. Both must be viable for the entire enterprise to succeed. And the government's market power should not be abused at the expense of private uranium producers.

Although we welcome Secretary Herrington's acnowledgement on September 26 that we are non-viable, we are disappointed at the limited relief which the Secretary is providing in response. The Secretary has yet to implement Section 161v. as we believe he is legally required to do. Instead, the Secretary has asked Trade Representative Yeutter to study whether to initiate a trade proceeding, and, if so, which one. The time for more study of what to do is long gone. What we need is effective relief, now. It is for this reason that we support legislation, such as H.R. 3457, introduced by Congressmen Richardson and Lujan, to require DOE to limit the use of non-domestic uranium by civilian nuclear power reactors. Other measures, such as requiring U.S. agencies to supply their needs exclusively from domestic sources, would also be appropriate. In addition, revision of DOE enrichment policies should be considered.

VI. Equitable Financing of Uranium Mill Tailings Reclamation

One of the factors contributing to the depressed condition of the domestic uranium industry is the heavy expense associated with stabilizing existing uranium mill tailings. EPA has estimated that compliance with its stabilization regulations at existing and future sites through the year 2000 will cost around a billion dollars. At a hearing held on July 16 in the Interior Committee, DOE asserted that the cost for cleaning up existing sites alone could be at least four billion dollars.

Approximately 30% of these tailings were generated under old Atomic Energy Commission uranium procurement contracts. Although the basic intent of these contracts was to reimburse millers for their costs, no one realized that tailings would require any reclamation, much less that reclamation would pose a significant cost, and thus no reimbursement was ever provided. As former AEC contracting officials have testified, had the AEC realized that tailings would pose a potential hazard or significant expense, the AEC would have shared in the costs.31/ The General Accounting Office in 1979 recommended that the government should assist in financing the stabilizing and managing AEC-related tailings at currently licensed sites. In the words of the GAO:

> "The mill owners apparently acted in good faith in carrying out their responsibilities in meeting contract provisions and Federal regulations. Unfortunately, like the Federal Government, they did not recognize that the tailings were a potential health hazard and did not provide for their control. Now, the Federal Government is requiring the mill owners to clean up all

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31/ See, e.g., testimony of Mr. Frank McGinley, July 16, 1985 (Exhibit F).

> of the tailings, including those generated before the hazard was recognized. We believe it is unfair for industry to bear all of the costs in cleaning up the tailings."32/

The GAO report specifically recommended that Congress provide assistance to mill owners by providing for a government contribution with respect to tailings generated under Federal contracts. DOE itself has in the past acknowledged the inequity of failing to provide some form of contribution at active sites.33/

Similarly, private uranium producers had no idea that billion dollar costs (EPA estimate) would be involved when they produced uranium for nuclear utility accounts. In most instances, producers accordingly neither negotiated for, nor received, compensation for these expenses. Since there is little or no new contracting for domestic uranium, it is not possible for them even to begin to recover these costs out of future production.

32/ GAO, "Cleaning Up Commingled Uranium Mill Tailings: Is Federal Assistance Necessary?" at p. 1 (1979).

33/ DOE, Answers to Questions on Commingled Tailings at Currently Operating Uranium Ore Processing Mills that Produced Uranium under Atomic Energy Commission (AEC) Contracts at p. 16 (January 1979).

This billion dollar burden is especially onerous when one recognizes that at the same time Canada is subsidizing its uranium industry by a roughly similar amount. As long as this enormous cost overhangs the industry, there will be little or no investment in domestic uranium mills, and the industry will continue to shrivel and, over time, become less and less competitive.

The Uranium Mill Tailings Reclamation Act of 1985 (H.R. 2236) would address this problem by providing a funding mechanism for reclamation of existing tailings. Under the proposed Act, the federal government would pick up its 30% share. Nuclear utilities would pay a fee of 0.15 mil per kwh of nuclear generated electricity. The fee is so low that it would have negligible impact on the cost of generating electricity from nuclear power. The funding mechanism and the fee provided in the Reclamation Act are modelled on the mechanism and fee established by the Nuclear Waste Policy Act34/ for funding disposal of spent nuclear fuel. The major difference is that the fee is only one-sixth as great. This fee is calculated to generate revenues sufficient to cover 55% of costs associated with reclaiming existing tailings. Private uranium companies would bear the remaining 15%. The companies would be responsible for

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34/ 42 U.S.C. §§ 10101 et seq.

100% of costs in the future unless otherwise provided in their contracts.

A number of misconceptions have arisen concerning the bill and I would like to respond to some of them in the remainder of my testimony.

First, some have suggested that nuclear utilities have "already paid" for reclamation in the form of high prices under previous uranium supply contracts. Some utilities paid high prices; others did not. On the average, we believe that it is easy to establish that U.S. utilities paid bargain prices.35/ Whatever the price, the fact remains that the expense currently being faced by producers was not recognized in the 1970's when supply contracts were negotiated. Moreover, the expense was not specifically, or generally, reimbursed.

Second, some have tried to distinguish the Nuclear Waste Policy Act (on which the proposed 0.15 mil/kwh tailing reclamation fee is based) by objecting that the utility share would "not necessarily" be paid by the persons who benefitted from the uranium associated with the tailings. The Nuclear Waste Policy Act is not distinguishable on this ground. The Waste

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35/ For one thing, "the industry has had a negative aggregate net income for 3 of the past 5 years." Indeed, the aggregate net loss in 1984 exceeded $200,000,000. Clark, The U.S. Uranium Industry's 1984 Operations and Financial Performance (AIF Conf., Sept. 1985).

Act "retroactively" assesses a fee for disposal of existing high level waste. This is conceptually the same as the proposed Tailings Reclamation Act. Moreover, current rate payers will benefit from the activities associated with the proposed tailings fee: an equitable financing mechanism for existing tailings will foster the preservation of a domestic uranium industry and thus assure a secure source of nuclear fuel for their current and future electricity needs.

Third, some have suggested that the Tailings Reclamation Act would make cessation of uranium milling attractive. According to this argument, so long as producers are faced with heavy reclamation expenses and no means to obtain reimbursement for reclamation costs, they will contrive to sustain minimal levels of production or some form of mothball status in order to avoid the expense. It follow, in this scenario, that if the reclamation expense were somehow reduced from the producer's perspective, the uranium industry would rush for the nearest exit. This analysis is not being received well in the uranium industry. For one thing, it ignores the fact that most businesses prefer to operate, if their costs permit, and not to write-off all their assets and to disappear. For another, it ignores the fact that state and federal reclamation laws will force reclamation sooner or later anyway. The plain fact is that as long as domestic producers are faced with huge expenses and no source to finance them, they do not have funds available for new investments to serve future utility needs.

Fourth, some have suggested that the hazards associated with tailings are minimal and that the regulations which are guiding the costly reclamation are overly stringent. The uranium producers, through the American Mining Congress, have vigorously pursued all their legal remedies against the regulations. Although the domestic uranium industry is hopeful that a number of the costly regulations will be revised, the industry also recognizes that it will nevertheless be required to incur a substantial financial burden in the reclamation area. Accordingly, cost-sharing along the lines of the proposed legislation remains appropriate.

Fifth, some have argued that in the 1968-84 period, approximately 12% of domestic uranium production was exported and that host states, which allegedly benefitted from uranium production, should also pay some of the costs. But the proposed legislation takes these two factors into account. The legislation provides that 15% of the reclamation costs for existing tailings will be borne by domestic producers. This figure exceeds either the export share (12%) or the state share (10%) as provided under Title I of the Uranium Mill Tailings Radiation Control Act for clean-up of so-called "inactive" sites.

Finally, it is alleged that there is no incentive for efficiency in the clean-up program envisioned in the proposed legislation because it is run by DOE. It is even suggested that such a "program may never come to an end." The clean-up program in the proposed legislation is no different in concept from the programs (a) at inactive uranium processing sites or (b) for disposal of high level nuclear waste and spent nuclear fuel. In both cases, DOE is responsible for the clean-up. Nevertheless, if Congress prefers, domestic uranium producers are prepared to conduct the clean-up rather than have it done by DOE. The 15% share attributed to domestic producers will be a substantial economic burden that would assuredly encourage them to be efficient and cost-effective in reclamation activities.

Adoption of the proposed legislation will assure the timely and safe disposal of uranium and thorium mill tailings and will finance that disposal through an equitable sharing of costs by all those who benefitted from the uranium with which the tailings were associated. UPA strongly supports adoption of the legislation.

Conclusion

Mr. Chairman, I again wish to express my appreciation for this opportunity to testify. The one point I wish to make crystal clear is that, absent a significant change in the approach being taken by DOE, our domestic uranium industry in the near future will almost totally disappear. This Nation will be in exactly the same state of dependency on imports which we sought to avoid when we developed a domestic uranium industry some 40 years ago. The only differences between now and then are that our uranium requirements are now greater and trade in uranium has, if anything, become more victimized by foreign government involvement, subsidies, and unfair trading practices. As a corollary, the reasons to seek to assure the maintenance of a viable domestic uranium industry should correspondingly be greater.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

WESTERN NUCLEAR, INC., et al.,
Plaintiffs,

v.

F. CLARK HUFFMAN, et al.,
Defendants.

C. A. No. 84C-2318

AFFIDAVIT OF LARRY A. BOGGS

I, Larry A. Boggs, being duly sworn, depose and say:

1. My name is Larry A. Boggs. Since 1980, I have been Senior Counsel at the American Mining Congress (AMC). AMC is a national trade association that includes most of the companies involved in this country's uranium mining and milling industry. AMC's offices are located at 1920 N Street, N.W., Suite 300, Washington, D.C. 20036. In my capacity as Senior Counsel, I keep abreast of issues relating to uranium viability and impact of policies of the Department of Energy (DOE) upon the uranium industry. At AMC, I am responsible for legal advice and related staff work for AMC's Uranium Policy Council and other AMC committees dealing with uranium issues. These committees include the Uranium Viability Subcommittee. I have been requested to make this affidavit by Plaintiffs in the above-captioned litigation.

2. Natural uranium must be enriched in the isotope U-235 to burn in U. S. nuclear power reactors. Nuclear fuel, as used in U. S. nuclear power reactors, is thus comprised of uranium and enrichment services. DOE is the exclusive domestic supplier of enrichment services. DOE policies with respect to the provision of enrichment services can have and do have a significant impact on demand for uranium and, consequently, the viability of the domestic uranium industry. For example, independent consultants (e.g., Nuexco and Nuclear Resources International) indicate that DOE's new enrichment services contract may diminish demand for uranium by as much as 100,000,000 pounds or more over the next five to ten years. This approximates or exceeds expected production for the period.

3. AMC believes that the domestic uranium mining and milling industry is not viable. AMC has recently testified before Congress that 17,000 of the uranium industry's workers -- 77 percent of the domestic work force -- have been laid off, and more layoffs are expected. Most uranium mines and mills have shut down. Those operating are operating on a curtailed basis. In the meantime, as AMC has explained, importation and commitments for future imports of foreign-source uranium have increased dramatically. Colorado Nuclear Corporation (an independent consulting firm which developed the computer model employed by DOE to forecast the uranium industry) in a report

prepared for AMC critiquing DOE projections indicates that, contrary to DOE's projections, the domestic uranium industry will continue to decline through the year 2000. AMC's own in-house estimates, submitted most recently to Secretary of Energy Hodel in a letter dated December 28, 1984 (attached), indicate that there will likely be only three uranium mills in the United States as of 1990.

4. On or about January 18, 1984, DOE issued a new generic enrichment contract, known as the Utility Services or US enrichment contract. DOE did not, to my knowledge, submit the new contract, or the basic terms and conditions which it embodies, in proposed form for review by pertinent Congressional committees as provided by section 161(v) of the Atomic Energy Act. DOE did not make the new contract, or the basic terms and conditions which it embodies, available for notice-and-comment rulemaking as provided in section 501 of the Department of Energy Organization Act. For example, the new contract, or its basic terms and conditions, in either proposed or final form were not published in the Federal Register.

5. DOE did not afford the domestic uranium industry an opportunity to meaningfully participate in the formulation of the new contract or the policies that it embodies. Comments were requested only from DOE's customers (i.e., nuclear utilities). AMC, upon finding out that DOE intended to issue a new contract,

obtained meetings on December 5 and 28, 1983 with DOE officials to attempt to ascertain DOE's plans. In response, DOE provided a draft contract to AMC for distribution to AMC's member companies, which was not received by AMC until January 3, 1984. By letter dated January 10, 1984 (attached), AMC requested a meeting on or about January 31, 1984 to provide comments on the contract and policies embodied therein. The letter noted that

> "Although our evaluation is necessarily tentative because of the limited time allowed for our consideration, we perceive the potential for damage to our industry in several areas."

The contract was issued on January 18, 1984 before AMC had an opportunity to provide any comments.

Larry A. Boggs
Larry A. Boggs

I, Larry A. Boggs, being duly sworn, hereby swear and attest that I am Senior Counsel at the American Mining Congress, that I have read the foregoing affidavit, and that it is true and correct to the best of my knowledge and belief.

Larry A. Boggs
Larry A. Boggs

Subscribed and sworn to before me this 7th day of January, 1985.

Margaret A. [illegible]
Notary Public

My Commission Expires: My Commission Expires January 31, [illegible]

QUIVIRA MINING COMPANY

DOE ENRICHMENT POLICIES
and
THE U. S. URANIUM INDUSTRY

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EXECUTIVE SUMMARY

Congressional concern over the viability of the domestic uranium industry resulted in the passage of legislation in 1983 that required the President to submit a comprehensive review of the domestic uranium industry in 1984 and for the Department of Energy (DOE) to report annually for the next ten years on the viability of the industry. The President's report prepared by DOE reflects the industry status as of the end of 1982 and thus does not accurately depict the far more distressed state of the industry that exists today. Estimated 1984 U.S. uranium production of 7000 short tons will be 30 percent less than 1983 production and only about 40 percent of U.S. requirements. In addition, at $17.50 per pound U_3O_8, the current spot price of uranium is at its lowest level in over 10 years, further confirming the depressed state of the uranium market and making long-term contracting practically impossible.

It must be objectively recognized that past DOE policies in enrichment have, in fact, greatly contributed to the present malaise in the uranium industry as well as the recent woes in DOE's own enrichment business. In 1984 DOE has been aggressively and, it appears, effectively trying to remedy its own situation with the introduction of the Utility Services (US) enrichment contract and changes in its operating and accounting procedures. However, in the process of addressing its own problems, DOE has essentially ignored the problems of the domestic uranium industry. Further, DOE's solutions for enrichment actually exacerbate the near-term problems in uranium.

The lack of a coordinated approach toward both enrichment and uranium is different from the integrated approach taken in the past when issues concerning uranium and enrichment were evaluated contemporaneously. This more recent development is significant when it is recognized that (1) Congress has given DOE the responsibility for assuring the viability of the domestic uranium industry and (2) DOE's enrichment policies can be structured to either benefit or harm the industry.

The way DOE's enrichment policy is currently being formulated, the domestic uranium production industry comes out a double loser. DOE has revalued its uranium stockpile at its original purchase cost in the 1960's ($26.00/kgU--about half the current market value), and now plans to draw some 50 million pounds of U_3O_8 equivalent from this stockpile from 1985 through 1989 as extra feed for a split-tails mode of operation. Split-tails allows DOE to reduce the cost of SWU's by substituting cheap uranium for relatively expensive electricity. In the process DOE creates a new form of demand 50 million pounds higher than would otherwise exist without split-tails. However, by drawing upon its stockpile, DOE is precluding the domestic production industry from enjoying the obviously needed benefits that would occur from such increased demand.

DOE has put a Variable Tails Assay Option (VTAO) in its new US contract which, in theory should be good for the uranium industry but which, in practice, may turn out to be too little too late. Simply stated, VTAO allows DOE's utility customers to trade-off enrichment with uranium to optimize their fuel costs. A utility which has purchased uranium cheaply can, like DOE, substitute cheaper uranium for more expensive enrichment. At $17.50/lb U_3O_8 and $135/SWU (DOE's price under its new US contract), a utility would want to specify an optimal tails assay of 0.33w/o. At this tails assay, uranium feed requirements would be increased by 28 percent above those required by DOE's standard transaction level of 0.20w/o. In general, extra feed requirements created by VTAO would come either from the utility's inventory or be purchased in the open market. In either event, the domestic uranium production industry would be helped.

However, while putting VTAO in its new contract, DOE is not making VTAO immediately available to all customers, not making the VTAO upper limit (0.30w/o) high enough, and imposing a not-insignificant surcharge (up to 7 percent of the SWU price) when VTAO does become universally available for the first time in fiscal year 1987. The end result is to limit the use of uranium by DOE's customers to levels up to 9.5 percent lower than might otherwise apply and to defer what extra demand that would occur by two years. Thus, uranium is being penalized by DOE's new contractual terms on the one hand without enjoying the potential compensating adjustment inherent in DOE's new operational mode on the other.

As a standard conversion term, DOE is allowing one class of customers, those with Adjustable, Fixed-Commitment contracts, to unilaterally reduce their enrichment purchases by 10 percent in FY 1985 and by 25 percent in FY 1986 as long as they take at least 70 percent of requirements from DOE. Further, during negotiations of conversions to the US contract, DOE has opted to sacrifice additional near-term SWU sales in fiscal years 1984, 1985, 1986 and 1987 in return for securing additional SWU sales (in the form of "100 percent contracts") in the 1990's. The significance of DOE taking such an approach should be made clear. By DOE sacrificing near-term SWU sales commitments, near-term uranium requirements are being directly reduced as well. While these moves may be valid to help DOE's enrichment business, they definitely hurt the uranium industry, yet in no case is there evidence that DOE checked in advance on the deleterious effects of its current contracting policies on the uranium industry before implementing them.

Thus, not only is DOE _not_ helping solve the near-term problems of the domestic uranium industry, but it is actually exacerbating the industry's current problems as it supplements its own long-term future enrichment business. If DOE through its enrichment operations is providing a service to the country and is at the same time responsible for assuring long-term supplies of uranium, it should not be enhancing the long-term sales of one at the expense of the near-term needs of the other. DOE should be moving aggressively, as it is, to streamline its operations, institute good management, cut costs, and maximize its market share. But in the process of saving itself DOE should also take steps to avoid further endangering the survival of the domestic uranium industry.

DOE needs to take an integrated approach to uranium and enrichment due to the fact that uranium and enrichment are to a degree substitutable and the Government has the responsibility to ensure that the nation's resources are efficiently used. It is important that a review of DOE's present and proposed contractual and operational policies in enrichment be conducted now, while DOE's policies for the future are being set, to determine whether these policies conform to past and present Congressional mandates with regard to uranium and enrichment.

The specific policies which should be reviewed include:

- DOE's proposed split-tails operation of the enrichment plants and the future use of the Government's uranium stockpile;
- the use of the variable tails assay option (VTAO) in the Utility Services (US) enrichment contract;
- the possible use of a marginal pricing scheme in selling enrichment services; and
- funding of enrichment research and development and capital expansion, and choices concerning future enrichment technology.

With regard to split-tails operation and the Government's stockpile of uranium, DOE should consider the following recommendations:

- the DOE enrichment plants should be operated at a tails assay at least as high as the weighted average transaction tails assay selected by its customers. This would prevent DOE from unnecessarily building up further inventories of natural uranium and using more electricity than necessary while reducing DOE's cash flow requirements;
- While uranium prices are low, DOE should consider operating its plants at a tails assay higher than the weighted average transaction tails assay (i.e., operate in a split-tails mode). In making this decision, DOE should consider the relative costs of electricity and uranium in selecting the optimum operating tails assay and, in turn, the amount of supplemental uranium feed required in each year;
- The additional supplemental feed for split-tails could amount to some 50 million pounds U_3O_8 equivalent in the period FY 1985 through 1989. This additional uranium should have been produced in the United States and should be purchased under competitive bidding in the open market from domestic sellers; and

- DOE should designate its current uranium stockpile of 157 million pounds U_3O_8 equivalent a national strategic reserve which should be frozen at its current level until (1) a decision is reached on the optimum level of this reserve to service the future needs of Government applications, and (2) the desired level of U.S. uranium production for viability is established.

With respect to VTAO, DOE should adopt the following recommendations:

- removal of the surcharge provision on the use of VTAO in order that the relative prices of uranium and enrichment not be distorted, ensuring an economically efficient use of each. The effect of eliminating this surcharge would be to increase uranium requirements by 2.5-3 million pounds per year in FY 1987 and beyond;

- make a surcharge-free VTAO immediately available to all customers to provide a stimulus for uranium demand while the market is so depressed. This action would increase uranium demand by roughly another 3 million pounds in each of FY 1985 and FY 1986 assuming an average tails assay of 0.28w/o versus 0.235w/o assay currently projected; and

- make VTAO available in the range of 0.20w/o to 0.35w/o, instead of the current upper limit of 0.30w/o.

DOE is considering a proposal to price 30 percent of its enrichment sales at its marginal cost of production. DOE's marginal price has been estimated to be as low as $60/SWU--$75/SWU below its current base price of $135/SWU under the US contract. On this issue we recommend:

- DOE should implement marginal pricing. In fact, by law DOE is required to only recover its costs and is prohibited from making a profit. The $135/SWU price was selected to recover all DOE's costs with a 52.5 percent recapture of its previous sales. Based upon letters of intent and expressions of interest to convert, DOE can already see that it will surpass that point with both its domestic and foreign customers and that DOE will gain at least 72 percent. Thus, DOE will have no choice but to offer marginal price. The end result in our opinion will dramatically help DOE win back the vast majority of its previous business and at least hold, if not increase, its previous market share.

- In implementing marginal pricing, DOE should do it in such a way as to benefit both near-term as well as long-term sales of U.S. enrichment and uranium; and

- DOE should accomplish this goal by setting the marginal price level not necessarily at its lowest possible level of $60/SWU but at such higher level, perhaps $95/SWU, which would still allow DOE to both (1) effectively compete and capture its enrichment sales and (2) to collect additional revenue to finance the purchase of domestic-origin uranium for a split-tails program.

- Foreign customers of DOE should not be expected to help finance the viability of the U.S. uranium production industry through their purchases of SWU from DOE. Therefore, the lower true marginal price, unadjusted for purchases of domestic uranium, should be charged to foreign customers. With an unadjusted marginal price of $60/SWU, DOE's overall price for foreign sales would be $99.38/SWU--low enough to compete effectively anywhere in the world.

Other recommendations include:

- an improved procedure for funding of DOE's research, development, and capital expansion in enrichment;

- establishing the position of a Deputy Assistant Secretary for Uranium Supply in the Office of Nuclear Energy in order that uranium interests be properly considered in future policy decisions; and

- apprising the domestic uranium industry of the ways in which future enrichment technology choices will affect uranium requirements and supply.

In conclusion, we believe DOE should at least compensate for the negative effects on the uranium industry of its near term SWU relief program by allowing immediate, free, and unrestricted VTAO and by buying the U_3O_8 it will need for supplemental feed for split-tails between 1985 and 1989 from the open market. The revenues to cover these purchases should be included in a competitive SWU price which would be lower than today's price even after inclusion of the component for these extra feed purchases.

These recommendations are only small adjustments when viewed in the total context of all the strong positive changes DOE has made, and is still contemplating making, in the management of its enrichment enterprise. As such they are eminently do-able and should be incorporated into the overall program now while DOE is firming up its basic future policies.

There is no way the U.S. industry can survive for the next five years on existing contracts and the 32.6 million pounds of unfilled requirements reported by the U.S. utilities to EIA in January 1984. Furthermore, as a result of DOE's negotiating special relief in 1984 to 1987 for utilities with excess SWU, even this value will be significantly lower when EIA conducts its next survey in January 1985. A free and immediate VTAO and supplemental feed purchases for split-tails from private industry would add 15 and 50 million pounds U_3O_8 to demand, respectively, over the next five years. This new demand of 65 million pounds, when added to unfilled requirements and existing contracts, can represent a beginning to a solution to the industry's problems.

The need for a comprehensive approach to solving uranium's problems has never been greater and should be addressed in a forthright, timely and effective manner. If the domestic uranium production industry could provide the extra feed needed for true VTAO and for DOE's split-tails program, it would significantly improve the current severely depressed state of the industry and its price structure. Higher spot prices for uranium would lead, in turn, to a resumption of long-term contracting by U.S. utilities with domestic uranium producers at price levels which would support a more viable production industry.

These recommendations are made in a spirit of cooperation in an attempt to provide a comprehensive approach to solving some obviously difficult problems. We trust they will be received and studied in the same collaborative spirit with which they were prepared and submitted.

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Section 1

INTRODUCTION

In 1982, the distressed state of the domestic uranium industry prompted Congress to enact legislation designed to enhance an understanding of industry viability. Specifically, Section 23(a) of the Nuclear Regulatory Commission Authorization Act of 1983 required the President to submit a report to Congress early in 1984 on the health of the domestic uranium production industry. Section 23(b) requires the Secretary of the Department of Energy (DOE) to report each year for the next ten years on the viability of the industry.[1]

In May 1984, DOE published the President's report, entitled United States Uranium Mining and Milling Industry - A Comprehensive Review.[2] The report depicts the industry as it was in the beginning of 1983 - over one and a half years ago. So much has occurred since January 1983 that the lack of timeliness in the President's report creates inherent shortcomings, making it an inappropriate tool by which to assess the current status and future prospects of the domestic uranium industry. DOE's first annual report (the Secretary's report), currently due for release in the Fall of 1984, is expected to represent an improvement in this regard. It is also expected to contain the Secretary's first judgment on the viability of the domestic uranium production industry.

For the past fifteen years, the Government's operation of the enrichment plants and sales of enrichment services has had a significant impact on the domestic uranium industry. Because of the substitutability of uranium for enrichment, this relationship will continue whether or not the industry is found to be viable. Consistent with the concept of viability is the issue of whether the Government's methods, past and present, of selling enrichment services has provided or is providing an equitable treatment of the domestic uranium industry and an efficient use of the nation's resources. If not, certain questions arise: What changes can be effectuated now that will provide for a more equitable and socially efficient relationship in the future? How can the fundamental relationship between uranium and enrichment be made to work for the mutual benefit of the enrichment enterprise, domestic uranium industry and the nation as a whole?

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[1] Public Law 97-415, Nuclear Regulatory Commission Authorization Act, January 4, 1983, Section 23.

[2] Report to the Congress by the President of the United States, DOE/S-0028, May 1984.

This report, prepared by Nuclear Resources International, Inc. (NRI), for Kerr-McGee Corporation's subsidiary Quivira Mining Company addresses the relationship between the Government's supplying of enrichment services and the viability of the domestic uranium industry. In doing so, this report has three main objectives:

(1) to examine the status of various current DOE policies concerning uranium and enrichment;

(2) to assess those policies which, if continued, will have either a detrimental or a less-than-optimal effect on the domestic uranium production industry; and

(3) to the extent we have the ability to understand DOE's goals, to make recommendations for improvements which will be practical, easily implemented, and of benefit to the domestic uranium production industry now and in the long term, while respecting DOE's interests.

Before we proceed with the main objectives of the report, it is appropriate to objectively recognize the effects the Government's past actions in enrichment have had on the uranium supply industry and to establish the Government's responsibility to the industry, since it is within the framework of this relationship that changes can be made now to the mutual benefit of both industries. This background is provided in the next section.

Section 2

THE HISTORICAL RELATIONSHIP BETWEEN U.S. ENRICHMENT AND URANIUM SUPPLY

The interdependence between the uranium and enrichment markets was recognized by the U.S. Government from the time that enrichment services were offered commercially. The Atomic Energy Act of 1954, the Private Ownership of Special Nuclear Materials Act of 1964 and the Uranium Enrichment Services Criteria of 1966 all supported the policy "...(1) to establish toll enrichment as the preferred means for obtaining enriched uranium from the AEC; (2) to help assure a viable domestic uranium mining and milling industry; and (3) to provide incentives to private industry to undertake the early expansion of exploration and development of the large uranium ore reserves and production capability required to supply the expected demand for nuclear fuel for civilian power reactors."[3]

There are several important implications that arise from this policy and the fact that it was not until 1974 that the AEC announced that it would phase out the restrictions on the enrichment of foreign uranium:

(1) At one time, the domestic uranium industry appeared to be on relatively equal footing with the domestic enrichment industry. Concerns about the effects on the uranium industry of enrichment contracting policies were thoroughly and openly discussed and debated in advance of enactment of these policies. [4]

(2) In the latter half of the 1960's and the early 1970's the industry was deemed not to be viable, and restrictions on the enrichment of foreign origin were used to protect the industry. [5]

(3) If the DOE should today find the industry to be non-viable, then it would be required by Section 161v of the Atomic Energy Act to reintroduce measures to interdict, or restrict to some degree, the enrichment of foreign-origin uranium for domestic use. [6]

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[3] U.S. Atomic Energy Commission, Statement on Uranium Supply Policies and Related Activities, September 3, 1968.

[4] See Senator Pastore's opening statement on Uranium Enrichment Services Criteria and Related Matters, Hearing before the Joint Committee on Atomic Energy, Congress of the United States, August 1966.

[5] Uranium Enrichment Services Criteria, 31 Federal Register 16479, December 23, 1966.

[6] Public Law 83-703, Atomic Energy Act of 1954, August 30, 1964.

With respect to the first two points, ever since the domestic uranium production industry "achieved" viability, its status vis-a-vis enrichment has been declining, and the Government's policies in enrichment, rather than helping the industry, have, in fact, been injurious to it. Using its monopoly power in enrichment, the old Atomic Energy Commission developed in 1973 an enrichment contract--the Long-Term, Fixed-Commitment (LTFC) contract--that resulted in unrealistically rigid delivery schedules to the utility customers of enrichment services. Demand for uranium was, in turn, dictated by these rigid enrichment contract schedules and not the operational needs of reactors. An accelerated contracting policy further exacerbated the problem as utilities rushed in to contract before the "order books were closed", significantly overcommitting in the process to purchases first of enrichment services and second of natural uranium for feed. As reactors were delayed, cancelled, or temporarily shut down, excess inventories of enrichment and uranium began to build. The disposal and absorption of these excess inventories that resulted from the LTFC and its successor, the Adjustable, Fixed-Commitment (AFC) contract, have since precipitated the decline of DOE's enrichment fortunes on the one hand, and of uranium prices and market opportunities for the domestic uranium production industry, on the other.

It should be objectively admitted, therefore, that the U.S. Government's contracting policies for enrichment from 1973 to 1983 have been largely responsible for the current large excess inventories and overcapacities in uranium and enrichment. By 1981, utility customers of DOE had begun to act with a vengeance to restore some semblance of order to their burgeoning inventories of enrichment services. By the end of 1983, DOE's domestic customers with Requirements-type contracts alone had cancelled some 16.1 million separative work units (SWU's) previously on order with DOE. DOE's foreign customers cancelled another 6.9 million SWU's in the same period. These 23.0 million SWU cancelled by just one class of customer represented more than 1.5 years of sales at DOE's 1984 level. 7/

7/ From internal NRI analyses.

With the prospect for more terminations to occur on extremely short (0-3.5 years) advance notice, the U.S. Government exercised its still considerable market power to save its shrinking business. To recoup its position, DOE took several contracting initiatives, starting with the stillborn Facility Requirements contract draft in 1982, the Interim Sales and Modified Interim Sales contracts of 1983 and culminating with the Utility Services (US) contract in January 1984. The introduction of the US contract was backstopped by a number of changes in the way DOE would operate its plants and account for its costs in developing enrichment prices. These initiatives are summarized in Table 2.1 below.

TABLE 2.1

DOE'S INITIATIVES IN 1984 TO REVITALIZE ITS ENRICHMENT BUSINESS

In Contracting

Introduce US contract with
- Requirements concept
- Minimum requirement of 70%
- Ceiling price of $135
- True VTAU

New SWU price goes into effect with Letter of Intent

Raised Fixed-Commitment and Requirements contract prices

Reduced existing SWU commitments
- 10% reduction in AFC's for 1985 and 25% in 1986; 100% thereafter
- "Duke Model" permitting accelerated workoff of inventories
- Near-term relief in 1984, 1985 and 1986 negoatiated in return for 100% contracts into 1990's

Initiated programs to help absorb excess SWU inventories by increasing potential secondary market demand through:
- 30% offset available in 1984-1986 for current Requirements contract holders
- AFC customers without excess inventories allowed to create unfilled requirements by 10%/25% reductions in 1985/1986
- 30% offset extended through 1989 for Requirements contract holders
- Usage Agreements provided again to converting 3.5 year Requirements contracts

Possibility of marginal pricing proposed on 30% portion of requirements.

Operationally

Delay GCEP construction schedule
- Deferral of Buildings 3 & 4
- Reduced production rates for Set III centrifuges
- Phase out of Set IV centrifuges

Accelerate advanced technology selection (AGC-Set V vs. ALVIS) to May 1985

Increase negotiation efforts for relief on power demand charges from TVA

Study closing down a gaseous diffusion plant, perhaps as early as 1988

Public hearings held at Oak Ridge, Paducah and Portsmouth on closing of plants

Adoption of split-tails operation for FY 1985-1989

Change valuation of uranium inventories to original cost of $26.00/KgU

Reduce depreciation on GDP's to percentage of plant in actual use (40%)

Set budgets and prices based on an achievable marketing goal of 75% of existing contracts converting with all taking only the minimum (70%) commitment.

This comprehensive program by DOE is impressive and early indications are that it is succeeding. However, with respect to uranium there is one problem. In the process of revitalizing its own enrichment business, DOE's mandated responsibility to assist in the maintenance of a viable U.S. uranium producing industry has been essentially forgotten. In direct contrast to the duality of concerns for both uranium and enrichment of the 1960's, by the early 1980's DOE no longer even made a pretense of recognizing the role of uranium in the nuclear fuel equation. This is evidenced by the fact that by 1984 DOE's offices of Nuclear Energy and its subsidiary Uranium Enrichment Operations had completely eliminated the groups that provided policy input on uranium in the past.

The only input to the Secretary of Energy today on uranium comes from the Energy Information Administration (EIA) which collects data but is prohibited by law from making any policy recommendations. The end result is that uranium has no active spokesperson at all anymore within DOE. There is no policy maker representing the legitimate interests of the domestic uranium production industry to whom the Secretary can turn when these interests come in conflict with those of enrichment enterprise. If the issue of uranium supply is held in such a low regard within DOE, then a legitimate question can be raised about how the Secretary can adequately assess the viability of the industry as required by Congress.

With the domestic uranium production industry operating at a third of capacity, with current spot market prices for uranium of $17.50 per pound U_3O_8 at their lowest levels in a decade, with long-term contracting for domestic uranium effectively paralized by these low spot prices, this is an appropriate time to re-examine the Government's roles vis-a-vis enrichment and uranium while DOE is revamping its operational and contracting policies in enrichment. It would seem that the Government's original attitudes toward uranium and enrichment provide an excellent starting point.

The Government does have a dual role: to provide enrichment as a service in a socially efficient way and to assure an orderly long-term supply of domestic uranium. In fulfilling its responsibilities, DOE should operate its enrichment plants economically, provide for long-term replacement supply and allow its customers to select that mix of uranium and enrichment--based on the relative costs of each--which provides for the lowest cost electricity to each utility's ratepayers. The Government should neither attempt to circumvent market forces, nor use its own market power to increase enrichment sales at the expense of uranium if such action results in an inefficient utilization of either resource.

DOE currently has two main choices with regard to the domestic uranium industry. First, it can continue its current approach which, at best, can be called benign neglect. This choice would be disastrous in its own way, as the industry will continue to deteriorate, and any recovery will occur too late and at too great a social cost. In short, the industry will not be able to supply the civilian and Government needs in the 1990's in any kind of orderly manner if present conditions are not improved.

The second choice would seem the more practical. DOE could institute some changes now in its enrichment operations and contracting procedures that would immediately provide for a more equitable treatment of the domestic uranium production industry. In so doing, DOE will become even more responsive to the needs of its utility customers at home and abroad and, accordingly, further enhance its own business prospects. Finally, DOE would fulfill its Congressional mandate to ensure an efficient use of the nation's natural and technological resources.

Uranium and enrichment in the United States face the same problem over the next several years. That problem is how to jointly survive in such a way that once excess inventories have been worked off and market equilibrium is restored, the needs of their existing and future customers can be supplied in an effective manner. DOE has taken steps to assure that enrichment weathers the storm. However, there is no evidence that any serious consideration has been given to what effect this new enrichment program will have on uranium, let alone how this program may be implemented in a way to help the uranium industry weather the storm. Therefore, it is extremely important to reassess those DOE policies on enrichment which impact uranium supply, and to do so at this time while such policies are still under development.

These topics will be addressed in the following sections:

- Future operation of the enrichment plants under the split-tails mode;
- Government inventories of uranium and inventory policies;
- The use of the variable tails assay options under the recently introduced Utility Services enrichment contract;
- The implications of "marginal pricing" of DOE enrichment services on enrichment and how marginal pricing can be used to improve domestic uranium supply prospects;
- The need for representation of uranium interests within DOE;
- The need for long-term funding authority for DOE for R&D and capital expansion; and
- The need for explicit information from DOE to the domestic uranium production industry on the implications for the industry of DOE's impending future AGC/AVLIC technology choices.

Section 3

DOE'S POLICIES ON SPLIT TAILS AND INVENTORY DISPOSITION

3.1 The Uranium Enrichment Concept and DOE's Policy of Split Tails

Enrichment involves the upgrading of the fissile (U-235) content of natural uranium to a higher level which will sustain a chain reaction in a nuclear reactor. Uranium as found in nature and produced in concentrate form contains 0.711 percent by weight (w/o) of the fissionable U-235 isotope. Normal feed to an enrichment plant has an assay of 0.711w/o U-235. After enrichment, the enriched product leaving an enrichment plant has an assay ranging from 2.0 to 4.0w/o U-235. The tails remaining at the enrichment plant usually have an assay ranging from 0.20 to 0.30w/o U-235.

The work required to separate natural uranium feed into an enriched product and a depleted tails assay is measured in separative work units (SWU's). In the diffusion process presently used by DOE most of the costs involved in separative work are associated with the cost of electricity to drive the diffusion process.

A certain amount of natural uranium feed and SWU's is required to obtain one kilogram of enriched uranium at a desired product assay. The exact amounts depend on the severity of the separation into products and tails, determined by the tails assay at which the enrichment plant operates. At low operating tails (0.20w/o U-235, or lower) a high percentage of the fissionable U-235 in the natural uranium feed is extracted. This operating mode maximizes enrichment and minimizes the use of natural uranium feed. It substitutes enrichment for uranium feed. Conversely, at high operating tails (0.30w/o U-235 or higher) extra natural uranium feed but fewer SWU's are required to obtain the same amount of enriched product. Less electricity is used at the cost of leaving a higher percentage of fissile U-235 in the tails. This operating mode substitutes uranium feed for enrichment in the production of nuclear fuel.

Under normal circumstances, operations, accounting and billing of DOE's enrichment enterprise would all be based on quantities and conditions derived from the operating tails chosen at any one time and these operating tails would be the same as the weighted average transaction tails specified by customers. For various reasons at different times, DOE and its predecessor agencies have chosen to run their business using an operating tails assay that was different from the transaction tails assay. This mode of operation is called split-tails and its historic and present implications on the U.S. nuclear fuel business will be examined below.

The split-tails concept was first considered in the early 1970's as a means to achieve two objectives considered most urgent at that time:

1. To dispose of the U.S. owned stockpile of natural uranium that was considered to be too large and too costly to carry indefinitely.

2. To accumulate a pre-produced stockpile of enriched uranium which could be used to mitigate surges in demand in future years and to defer the date when new enrichment plant capacity would be required. By 1972-73, deferral of new capacity additions became important to gain time for private industry to mobilize under the Nixon Administration's plan for private industry enrichment.

Starting with early attempts in the late 1960's, the disposal of the DOE uranium stockpile was always conditioned on the achievement and maintenance of "viability" of the domestic uranium production industry. Eventually the split-tails concept was accepted as the disposal mode since it was judged less disruptive to the private uranium market than any direct, although controlled, sales. Split-tails, accepted as the disposal method which would bring the government into the least competition with the private industry, was initiated at the beginning of FY 1972. The operating mode of the government enrichment plants after this time is shown below in Table 3.1.1.

TABLE 3.1.1

DOE'S TRANSACTION AND OPERATING TAILS: 1971-1984

	Tails Assay (w/o U-235)	
Length of Time	Transaction	Operating
Through FY 1971	0.20	0.20
FY 1972-FY 1975	0.20	0.30
FY 1976-FY 1978	0.20	0.25
FY 1978-present	0.20	0.20

During the eight years of split-tails operation a total of 36.4 million SWU were produced and a total of 17,770 MTU (46.2 million pounds U_3O_8) were transferred from the U.S. Government's natural uranium stockpile into the preproduced enriched uranium stockpile. Most of this enriched uranium preproduced under split-tails has subsequently been sold by DOE. Between 1978 and 1984 DOE has elected to operate its enrichment plants at levels lower than otherwise required by its customer's orders. The shortage in each year has been withdrawn from the preproduced enriched stockpile. At the 1983 rate of disposition, DOE's enriched stockpile should be completely sold sometime in 1986. With costs remaining flat at $10 per pound U_3O_8 (at $0 for conversion) and sales values rising to $38.50 per pound U_3O_8 in 1983, the sale of the natural uranium component contained in this preproduced enriched stockpile became a very profitable part of DOE's business. In 1983 alone, DOE realized a net benefit of $57 million from selling 801 MTU (2.1 million pounds U_3O_8) in the form of preproduced enriched uranium. Since DOE is required by law to operate on the principle of cost-recovery-but-no-profit, this "profit" on the sale of its natural uranium inventory is used to offset costs in other areas of the enrichment enterprise.[8]

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[8] Uranium Enrichment Annual Reports, U.S. Department of Energy, 1979 through 1983. The 0.20w/o transaction tails assay for 1978 to the present is actually a nominal transaction tails assay. The actual transaction tails assay has been higher due to use of VTAO by AFC customers.

3.2 "Reverse" Split-Tails due to the Adjustable Fixed Commitment Contract

Although the officially announced period of split-tails operations formally ended with FY-1978, DOE, in fact, has continued to operate in a split-tails mode because of the Variable Tails Assay Option (VTAO) included in the AFC enrichment contract. VTAO allows a utility customer to select a transaction tails assay within a range of 0.16 to 0.30w/o U-235. During a period of low SWU, high uranium prices, or to simply use up excess SWUs under purchase contracts from DOE, a utility with VTAO would select a transaction tails assay below DOE's operating tails assay of 0.20w/o U-235. Duke Power Company represents an example of one U.S. utility which selected a tails assay of 0.16w/o in the past specifically for this reason. In this case the utility delivered less uranium to DOE and took delivery of more DOE-produced SWU in its enriched product than it would have if transacted at a 0.20w/o tails assay. As during previous years, DOE supplied the supplemental uranium required to balance operations from the U.S. stockpile. In this way, DOE "sold off" part of its stockpile.

With the collapse of uranium prices and the steep increases in SWU prices in recent years, a utility with VTAO was more likely to select a transaction tails assay above DOE's operating tails assay of 0.20w/o. This approach allowed a utility to optimize its overall costs to a limited extent taking delivery of fewer DOE-produced SWU in a given quantity of enriched product but delivering more uranium than DOE requires to run its operation. This would have been a good deal for uranium producers and holders of uranium inventories because it would have resulted in the use of more uranium. But substituting uranium for enrichment was deemed to be bad for DOE since it would have minimized SWU sales from its already underutilized facilities while forcing DOE to add additional high-priced uranium to the U.S. stockpile. However, DOE on the surface protected itself through the VTAO provisions of the AFC contract.

In the AFC contract, a utility was permitted to select a higher tails assay and deliver the required additional uranium, but the utility could not reduce its SWU purchases as needed to arrive at the optimum amount of enriched uranium. By increasing the tails assay and holding the amount of separative work constant, a utility uses more of both uranium and enrichment--ending up with more enriched product than it needs. The utility would then sell this extra enriched product in the secondary market to buyers which partially terminated their DOE Requirements contract.

Thus, VTAO in the AFC contract was a mixed blessing for utilities and uranium producers alike. It contributed to an increase in the demand for uranium followed by a complex substitution of uranium for enrichment through secondary market transactions. The extra uranium delivered to DOE ended up not in depleted tails but in the U.S. Government's uranium stockpile. Available for disposal at any time, it thus became an added concern for producers considering investments for long-term supply.

3.3 Split-Tails, the Utility Services Contract, and DOE Uranium Inventory Policy

To compound DOE's dilemma with the AFC contract, its utility customers demanded that a true VTAO become an integral part of the new US contract which DOE began to offer to all its customers in January 1984. DOE granted true VTAO in its new contract but, fully aware of the potential impact that a universal, true VTAO would have on its enrichment enterprise, severely restricted its value to utilities. DOE granted it only for commitments in FY-1987 and later and, then, only with the provision of a surcharge on its use. The US contract has an upper limit on this surcharge of .07 percent of its price for every additional 0.01w/o selected above DOE's operating tails assay of 0.20w/o U-235. DOE has already announced that in FY-1987 it will charge the ceiling. Thus, a customer specifying 0.30w/o tails under the US contract's VTAO provision will pay 7 percent extra to DOE. In 1984 values, that would be 7 percent of $135/SWU, or an extra $9.45/SWU.

In granting true VTAO, DOE should also operate its enrichment complex at a tails assay at least as high as the average transaction tails assay selected by its customers, thus avoiding a condition of "reverse" split-tails. If DOE had been forced in 1983 to transact all its sales, totaling some 15.1 million SWU, at a tails assay of 0.25w/o U-235 while producing them at an operating tails assay of 0.20w/o, it would have added an extra 1.7 million pounds of U_3O_8 contained in customers' feed deliveries to the U.S. uranium stockpile. It would therefore be in the best interests of DOE, utilities and uranium producers if DOE on an annual basis operated its enrichment complex at least at the average transaction tails assay selected by its customers.

Requiring DOE to operate its plants each year at the average tails assay as specified by its customers prevents any further increases in the U.S. uranium stockpile and alleviates one of the concerns of the domestic uranium production industry about a second Government inventory overhanging the industry.

3.4 DOE's Stockpile of Natural and Enriched Uranium

Ever since the U.S. Government accumulated its stockpile of natural uranium as a result of the stretched-out procurement program in the 1960's there has been talk that this stockpile was a burden on the taxpayer and should promptly be disposed of. This attitude may have been justified in the years when U.S. production was over one half of free world production, far outstripping annual consumption and when the stockpile represented a number of years of forward requirements. At this time, however, the U.S. Government should re-evaluate U.S. uranium supply potential and acknowledge that it has lost its secure and pre-eminent position in uranium production. It should further recognize that the combined effects of DOE's own in-process and flywheel needs for enrichment, the split-tails program and the Government's own applications will deplete the stockpile by 1992 at the latest. Any disposition of the stockpile at this time would occur at a time when U.S. requirements are increasing and U.S. production is declining. It is questionable whether DOE has considered the uranium stockpile in this context.

The need for a national uranium stockpile can be illuminated by considering a few pertinent facts:

1. The uranium inventory at DOE enrichment plants by the end of FY-1983 was as follows:

   As natural uranium - 41 million lbs U_3O_8
   As enriched uranium - 116 million lbs U_3O_8
   Total inventory - 157 million lbs U_3O_8 9/

2. Of the total inventory only about 140 million pounds U_3O_8 are available for disposition, with the remainder locked up as in-process inventory and flywheel.

9/ Survey of United States Uranium Marketing Activity 1983, Energy Information Administration; DOE/EIA-0403(83); August 1984. There appears to be some disagreement on the quantities of the stockpile in natural form. In its Interim Working Scenarios dated March 30, 1984, the statement is made "DOE currently has a natural uranium inventory in excess of 40 million kilograms of uranium". This would equate to 104.5 million pounds U_3O_8 equivalent versus EIA's 41 million pounds.

3. Direct Government needs over the next ten years, are estimated to be 107 million pounds U_3O_8 equivalent.

4. The balance of the total inventory left for civilian applications represents no more than 1 to 1 1/2 years of fuel requirements for U.S. reactors at 1984 rates of consumption. Of this a little over one year is in the form of natural uranium and a little less than half a year in the enriched form.

5. The natural uranium portion of the inventory represents less than two years of production at the rate achieved by the U.S. uranium industry in 1983. It should be remembered, however, that in 1983 the uranium industry was producing only two-thirds of the uranium that was consumed by U.S. reactors in that year with the remainder coming from inventory or imports.

6. The total DOE uranium inventory has held fairly steady during the last five years decreasing by only 5.5 million pounds U_3O_8 or 3.4 percent.

DOE should seriously consider declaring now that the U.S. uranium stockpile in its present size will be maintained as a strategic national energy reserve. This would remove its threat as a supply source that would compete with the domestic uranium production industry.

3.5 DOE Plans for Stockpile Disposal Through Split-Tails Operation

Present plans by DOE for disposal of the Government's stockpile are outlined in a 1984 report by the U.S. General Accounting Office (GAO) to Congressman Ottinger:

> ...DOE plans to change the operating mode of the diffusion plants, beginning in fiscal year 1985, to use larger amounts of natural uranium feed and lesser amounts of more costly electric power. Since a given quantity of enriched uranium can be produced by using different combinations of natural uranium feed and electric power, DOE can change its production operations to use more of one and less of the other. According to DOE, by using more of its stockpiled natural uranium feed and less power, production costs can be lowered and the price of DOE enrichment services reduced. Furthermore, because no cash outlays would be required to obtain the already stockpiled natural uranium feed, this operational change could also, in the short term, improve the program's cash flow by reducing cash outlays for power.
>
> ...On April 4, 1984, DOE announced a change in its basis for valuing the uranium inventory for pricing purposes from the current market price to its acquisition cost. According to DOE, the current market price is about $40 per pound, while its acquisition cost is about $9 per pound.
>
> ...By valuing the uranium feed inventory at the lower cost, DOE is also able to reduce its direct production costs. Since the enrichment plants can use different combinations of electric power and uranium feed to produce enriched uranium, DOE will for the immediate future, be able to use more of the less costly uranium feed inventory and less of the expensive electric power. As discussed earlier, the change in the value of the feed inventory plus associated imputed interest will enable DOE to reduce its costs of producing enriched uranium. According to DOE, this modification will reduce the $161.91 base calculation by about $17 per separative work unit.[10]

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[10] Report to the Chairman, Subcommittee on Energy Conservation and Power, House Committee on Energy and Commerce, U.S. General Accouting Office; GAO/RCED-84-156; April 25, 1984. The $9/lb. U_3O_8 value mentioned by DOE is based upon $26.00/KgU for natural UF_6 with $2.40/KgU assigned to conversion.

This excerpt describes DOE's plan to change its operating tails not just to the point where it would equal the annual average transaction tails assay selected by its customers (eliminate the "reverse" split-tails as described earlier) but to a point high enough above the annual average transaction tails assay selected by its customers where DOE stands to gain considerable benefits. DOE's current plan is to operate the enrichment plants at the operating tails assays shown in Table 3.5.1.

TABLE 3.5.1

DOE'S PLANNED OPERATING TAILS ASSAYS: 1985-1989

	Tails Assay, w/o U-235	
Fiscal Year	Transaction	Operating
1985	0.20	0.32
1986	0.20	0.35
1987	0.235	0.35
1988	0.235	0.35
1989	0.235	0.33

The gain to DOE will be achieved by depleting the existing U.S. stockpile by some 53 million pounds U_3O_8 equivalent.

If the entire stockpile were devoted to split-tails for the civilian industry, during the next ten fiscal years DOE could benefit by as much as $2.4 billion (140 million SWU x $17 per SWU savings).[11/] As noted by GAO, this becomes possible by DOE valuing the national uranium stockpile at its original acquisition costs in the 1960's of $26.00/KGU (approximately $9.00/lb. U_3O_8 and $2.40/KgU for conversion) and then feeding the full 157 million pounds of contained U_3O_8 from the stockpile into a split-tails mode of operation between 1985 and 1994.

[11/] Dr. Shelby Brewer, Assistant Secretary for Nuclear Energy, DOE, cited the $17/SWU figure in a letter to the Honorable Richard L. Ottinger, Chairman of the Subcommittee on Energy Conservation and Power, April 3, 1984 (Appendix A).

For the past five years, DOE has been producing less SWU than contracted deliveries would require, drawing the difference from pre-produced inventories which were themselves created from the earlier split-tails program in the 1970's. As such, DOE has, in effect, been selling some of its inventory of natural feed through this route.

It is instructive to show how DOE valued its uranium stockpile under these circumstances. In its annual reports for FY-1979 through FY-1983, DOE accounted for uranium sales with the volumes and revenues as shown in Table 3.5.2.

TABLE 3.5.2

ANALYSIS OF DOE'S SALES OF FEED IN PRE-PRODUCED PRODUCT[12]

	YEAR				
	1979	1980	1981	1982	1983
Feed Sales (MTU)	1,792	1,234	1,627	1,551	1,613
- U_3O_8 equivalent (000 of lbs)	4,700	3,200	4,200	4,000	4,200
Revenues to DOE					
Gross Sales (millions)	$103	$75	$109	$123	$160
Cost	52	32	42	40	42
Net Benefit to DOE	$51	$43	$67	$83	$118
U_3O_8 Unit Values					
Gross Sales (per lb U_3O_8)	$22	$23	$26	$31	$38
Cost	11	10	10	10	10
Net Benefit to DOE	$11	$13	$16	$21	$28

As can be seen from the above table, uranium sales have always been a sizeable and profitable piece of business for DOE. DOE's sales in 1983 were equal to 20 percent of the U.S. uranium industry's production in the same year (and 25 percent of estimated production for 1984). They were made at the same prices as the average price of uranium delivered in 1983 under all long-term contracts[13] and nearly two times as high as could have been realized on the spot market. Furthermore, under its accounting method, DOE realized a net value that was probably higher than the net profit realized by the entire U.S. uranium industry. To the extent that the above uranium sales were made for DOE program activities, the withdrawals from preproduced stockpiles cannot be challenged. A different situation exists, however, with current DOE plans.

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[12] DOE Annual Reports for Uranium Enrichment Services Activity (UESA), op. cit. Unit values were calculated by NRI based on the data in these reports and rounded to two significant figures

> DOE's revaluation of its natural uranium inventory relates to sections 63 and 161(m) of the Atomic Energy Act of 1954, as amended. These sections require the selling price or value for uranium feed to (1) provide reasonable compensation to the government and (2) not discourage the development of private sources of supply.
>
> ...Documents provided by DOE indicate that it will have to replace its feed inventory in the early 1990s. The cost of uranium at that time will probably be higher than the $9 per pound acquisition cost DOE now plans to value it at....[14]

Under DOE's current plan, the total available U.S. uranium stockpile would be exhausted in eight years. This rapid and total disposal of the U.S. stockpile is apparently of no concern to the DOE enrichment enterprise as the following comment announcing the internal transfer of the U.S. uranium stockpile from the enrichment enterprise to DOE attests:

> During FY 1982 a management decision was made to maximize use of customer-provided uranium inventories instead of government-owned uranium to meet feed requirements. Government-owned feed in excess of that needed to supplement customer-provided feed in meeting total requirements was moved out of Uranium Enrichment Services Activity (UESA) inventories. The decision to fully utilize available customer-provided feed resulted in a reduced interest cost of $97.4 million in FY 1982. To reflect a consistent cost accounting for interest on feed, a prior year cost adjustment of $193 million credit is included in FY 1982 as an adjustment to cumulative UESA net income.[15]

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[13] EIA 1983 Market Survey, op. cit., Table 5, p. 13.
[14] GAO, op. cit., p. 14.
[15] 1982 Uranium Enrichment Annual Report, U.S. Department of Energy, ORO-829, p. 7.

This kind of accounting wizardry may be an acceptable way to lower SWU costs by transferring costs to DOE's general ledger account, but it does not show any concern for national security, for the taxpayer's money or for an industry which will be directly deprived of its livelihood by this stockpile disposal action.

The U.S. uranium industry should be given a chance to provide as much of the uranium required by the planned split-tails operation of the enrichment plans as the industry could provide under a competitive bidding system. Under this system DOE would be required to buy U.S. origin uranium as long as offered prices remained below the replacement value of DOE's stockpiled uranium. Bidding should be open to U.S. producers as well as U.S. utilities as long as the uranium offered from utility inventories was originally produced in the United States.

This proposed split-tails arrangement would:

1. Let DOE enjoy the benefit of collecting from the utilities for enrichment work it did not perform in producing enriched uranium,
2. Enable DOE to use some of these funds to provide a market for U.S. origin uranium to assist the viability of the U.S. uranium industry;
3. Provide DOE with valuable information about the continued availability of competitively-priced uranium and EIA with a direct and independent measure of market prices; and,
4. Preserve the national stockpiles of enriched and natural uranium for the purposes originally intended.

If this arrangement does not give DOE the full extent of the subsidy originally planned, the shortfall should spur DOE to a more persistent effort in finding savings within its own operational boundaries and those of governmental agencies such as the Tennessee Valley Authority (TVA).16/

16/ In the letter to Congressman Ottinger, op. cit., Dr. Brewer stated as two of the assumptions used in developing DOE's enrichment prices that:
- DOE expected no relief from TVA capacity charges for electricity contracted but not taken, and
- DOE could not assume lower electrical costs from TVA despite recent attempts to that effect by DOE.

Savings in R&D, capital construction and TVA billing are cost savings which would result in a truly lower SWU price. Lowering the SWU prices by disposing of the U.S. uranium stockpile would result in wasting a national asset without in any way assisting the viability of the U.S. uranium industry.

In other words, as the enrichment enterprise is trying to put its on-going business in order by locking up the next 10 years of business, DOE should assure itself and the country that the survival of its enrichment business is not being achieved at the cost of depleting the national uranium stockpile or depriving the U.S. uranium industry of its chance to remain viable.

In its present depressed state the U.S. uranium industry must be heard and respected before DOE locks up the only opportunity for sales which would give the U.S. uranium industry a chance to restore its health in the near term. It seems less than efficient for DOE to deplete the U.S. inventory now when, within seven years at the latest, DOE will need to come back into the market to buy uranium for national defense and DOE program activities. The problem today is select measures that in that not-so-distant time there may be a U.S. uranium industry ready and capable to supply a steady and sizeable stream of uranium to the utilities and DOE without a massive disruption of the market.

Section 4

DOE'S POLICY ON VARIABLE TAILS IN ITS US CONTRACT

4.1 The Effects of the Current VTAO

In contrast with the limited variable tails assay option (VTAO) provision of the AFC contract, the new US enrichment contract has a provision which, when coupled with the requirements-type nature of the contract, permits uranium to be substituted for enrichment to a certain extent in the production of enriched uranium. However, the US contract also has a provision for placing a surcharge on the use of VTAO. This surcharge has a limit of 0.7 percent increase in the SWU price for each 0.01w/o increase in the tails assay above 0.20w/o. Further, the tails assay can only be increased to 0.30w/o, and the VTAO provision cannot be exercised until FY-1987.[17] The surcharge for the use of VTAO in FY-1987 will be equal to the ceiling limit.

The effect on uranium requirements due to a change in the tails assay can be quite significant. For 3.0w/o enriched product, increasing the tails assay from 0.20w/o to 0.30w/o increases uranium requirements by 19.9 percent. Raising the tails assay from 0.20w/o to 0.35w/o increases uranium requirements by 34 percent. It is significant that the upper limit on the tails assay selection in the US contract is 0.30w/o.

For a given set of uranium feed (natural UF_6) and enrichment prices, there exists a transaction tails assay that results in the optimum (lowest-cost) mix of uranium and enrichment. Thus, as the enrichment price increases relative to the uranium price, a customer would desire to use more uranium and less enrichment in the production of nuclear fuel. Figure 4.1.1 graphically depicts this relationship.

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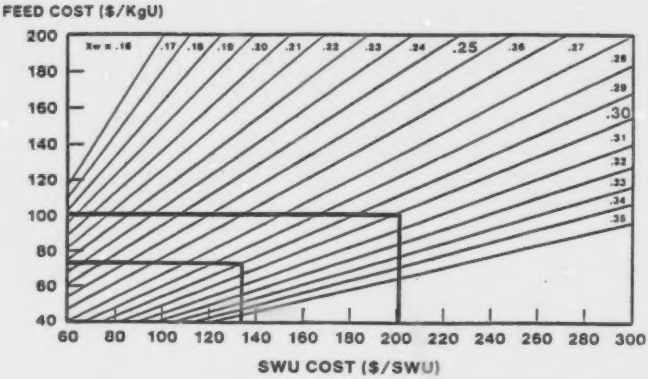
[17] Those customers which have Adjustable-Fixed Commitment (AFC) contracts that convert to the US contract can continue to use the VTAO in the AFC contract at no charge until 1987.

FIGURE 4.1.1

OPTIMAL TRANSACTION TAILS ASSAYS



For example, at an enrichment price of $135.00/SWU (the current US contract value) and a $72/kgU uranium feed price (approximately $25/lb U_3O_8 and $7/kgU for UF_6 conversion), the optimal tails assay is 0.29w/o. At much higher levels of $100/kgU feed and $200/SWU enrichment cost, the tails assay of 0.30w/o would still be at approximately the same level. Based on today's (US) enrichment price of $135/SWU and spot price for natural UF_6 of $47.50/kgU ($17.50/lb. U_3O_8 and $0.80/lb. U for conversion), the optimal tails assay is 0.34w/o. However, this higher tails assay, it should be noted, is outside the range allowed by DOE. DOE's current limit of 0.30w/o thus eliminates up to 9.5 percent of uranium demand that might otherwise exist for a given customer of DOE.

Not only does the VTAO as provided for in the US contract have an upper limit of 0.30 w/o, but it contains a surcharge provision for its use. This surcharge in effect raises the price of enrichment as the customer raises his tails assay. As previously noted, if the surcharge equals DOE's ceiling (0.7 percent increase in the SWU price for each 0.01w/o increase in the tails assay over 0.20w/o) as it will in FY-1987, DOE's SWU price would increase by 7 percent if a customer selected a 0.30w/o tails assay. If the SWU price were $135 in FY-1987, a customer selecting a 0.30w/o tails assay would pay $9.45 additional per SWU purchased, or $144.45 per SWU.

The effect of the higher SWU price is to (1) reduce the demand for uranium under VTAO that would exist in the absence of the surcharge and (2) reduce the savings to the customer from the optimization potential of VTAO. Figure 4.1.2 shows the effect of a 0.7 percent surcharge on the optimal tails assay at different enrichment prices and a $72.00/kgU feed price for 3.0w/o product assay. The optimal tails assay is uniformly reduced by about 0.03w/o by the imposition of DOE's surcharge. Lesser surcharges would result in correspondingly lesser effects on the optimal tails assay as shown in Figure 4.1.3).

In Figure 4.1.4 savings levels associated with optimal tails assay selections are shown in $/lb. U_3O_8 for different surcharges for the same $72/KGU feed price and 3.0w/o enriched product assay used in the earlier example. The saving levels represent the amount of money a utility can save by selecting a tails assay above 0.20w/o, and are expressed in terms of $/lb. U_3O_8 contained in the enriched product. (The savings could just as easily be expressed as $/kgU of enriched product or $/SWU contained in the enriched product.) With no surcharge and a $135/SWU enrichment price, the savings level would equal $2.40/lb U_3O_8 for every pound of U_3O_8 required to produce the desired quantity of enriched product.

FIGURE 4.1.2

OPTIMAL TAILS ASSAYS FOR VARIOUS SWU PRICES

FEED COST = $72.00/KGU PRODUCT ASSAY = 3.00 W/O

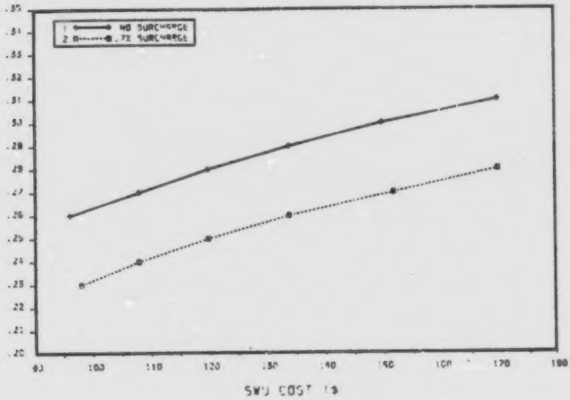


FIGURE 4.1.3

OPTIMAL TAILS ASSAYS FOR VARIOUS VTAO SURCHARGES

FEED COST = $72.00/KGU PRODUCT ASSAY = 3.00 W/O

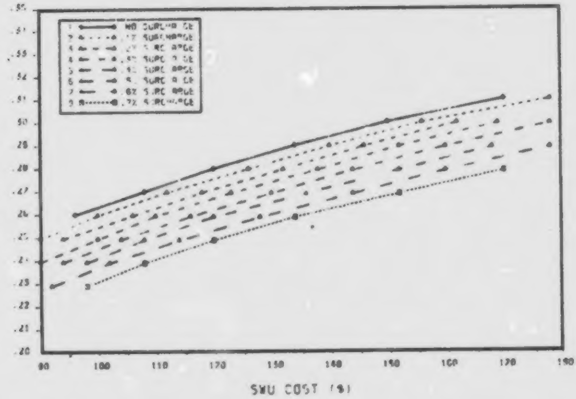


FIGURE 4.1.4

U308 SAVINGS LEVELS AS A FUNCTION OF VARIOUS VTAO SURCHARGES
FEED COST = $72.00/KGU PRODUCT ASSAY = 3.00(W/O)

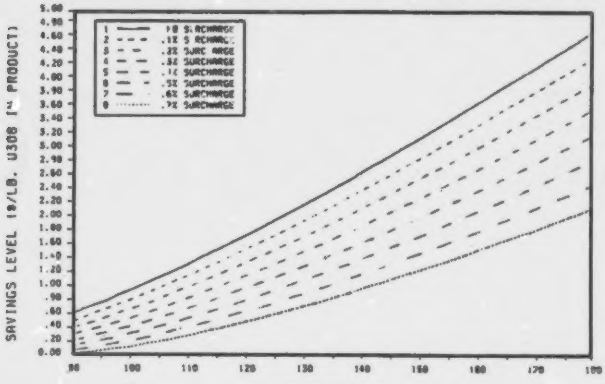
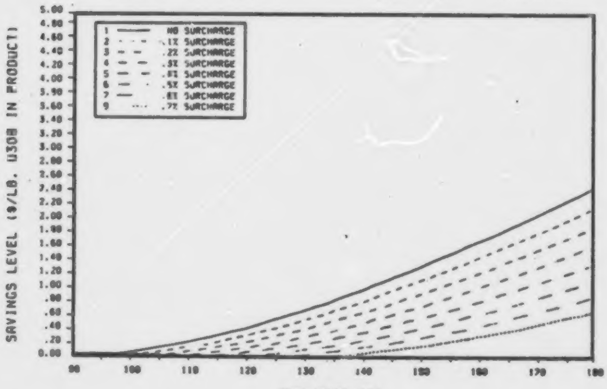


FIGURE 4.1.5

U308 SAVINGS LEVELS FOR HIGHER COST FEED UNDER VTAO
FEED COST = $111.00/KGU PRODUCT ASSAY = 3.00(W/O)



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If the total enriched product for a hypothetical reload batch of fuel amounted to 30,000 kgU at 3.00w/o, it would contain about 500,000 pounds U_3O_8 at a 0.29w/o tails assay (the optimal tails assay from Figure 4.1.3). Thus, a utility customer would save $1,200,000 ($2.40 x 500,000 lbs. U_3O_8) by providing more natural uranium and enriching at the higher optimal tails assay versus providing less uranium but enriching it at DOE's current standard 0.20w/o tails assay. Again, from Figure 4.1.3, the optimal tails assay is seen to drop from 0.29w/o to 0.26w/o when the 0.7 percent surcharge is imposed. With a 0.7 percent surcharge, the savings level is reduced to only $.90/lb. U_3O_8 or $427,500 ($.90 x 475,000 lbs. U_3O_8) - $772,500 less than the savings when no surcharge is applied. Thus, not only does the surcharge reduce the optimal tails assay, but it also reduces the benefit to DOE's customer from using VTAO, as well as the amount of extra uranium that is required. Thus, the uranium industry loses another 6 percent of otherwise increased demand when DOE's proposed surcharge is fully applied.

A case where the 0.7 percent surcharge completely destroys the incentive to use VTAO is shown in Figure 4.1.5. This figure is based on a feed price of $111/kgU, which is equivalent to a U_3O_8 price of $40/lb with a $7/kgU UF_6 conversion charge. Although the savings levels are lower here than those shown at the $72/kgU feed price (only about $425,000 for the postulated reload), they are still significant as long as no surcharge is applied. However, the savings potential for using VTAO is completely eliminated when a 0.7 percent surcharge is imposed and the base enrichment price is $135/SWU. For this combination of feed price, SWU price, and surcharge, the optimal tails is 0.20 w/o and thus VTAO affords no benefit at all to the customer. The average delivery price of all U_3O_8 sold by domestic suppliers to domestic utility customers in 1983 was $38.21/lb. U_3O_8 and is estimated by EIA to be $46.42 for 1984 18/. Thus, the VTAO provision in the US contract would not benefit the average U.S. utility if the surcharge were imposed, assuming that VTAO were made immediately available to all customers.

18/ EIA Market Survey, op. cit., p. 13.

Adjusting the tails assay and thus altering the mix of uranium feed and enrichment services represents a great potential to the electric utility customers of DOE for optimization of nuclear fuel costs. Optimizing fuel costs in turn allows the utilities to pass along the lowest (optimal) fuel costs to their ratepayers. In the absence of a surcharge, the adjustment of tails is based solely on the relative costs of uranium feed and enrichment, and provides for a socially efficient use of both resources. The surcharge on VTAO is akin to a tax or tariff in that it is intended to discourage the use of a commodity (uranium) in favor of another service (enrichment). Further, the government is discouraging the use of a commodity produced in the private sector for a service that the government itself provides. Thus, not only does the surcharge create a net loss from the non-optimal use of uranium and enrichment, but a transfer of wealth from uranium suppliers to the government.

Three specific recommendations can be made concerning VTAO:

1. Remove the surcharge and any provision for a surcharge in the enrichment price. For reasons listed above, the surcharge is neither equitable nor provides for an efficient use of resources.
2. Make VTAO immediately available to all customers. The critical time for uranium is now and over the next several years. VTAO would add stability to the uranium market as it adds some elasticity to the demand for uranium (i.e., as uranium prices go down relative to enrichment, a customer would, on average, want to buy more uranium).
3. Expand the upward limit of VTAO to 0.35w/o. For some customers, the optimal tails assay (without the surcharge) is above 0.30w/o. If uranium feed costs were to remain as low relative to enrichment costs in the future as they are today, raising the tails assay range would maximize cost optimization potential.

4.2 The Beneficial Effects of a Revised VTAO

It is evident that DOE is delaying the introduction of VTAO to all of its customers and initially offering it with the surcharge equal to the ceiling limit because they are concerned about losing sales of enrichment services during a period that is critical for them as well as the U.S. uranium industry. However, DOE has taken other steps which have had a much greater effect on their near-term business than immediately offering VTAO. As one of its standard conversion terms, DOE is allowing fixed-commitment customers to reduce their FY-1985 commitments by 10 percent and their FY-1986 commitment by 25 percent, as long as these customers buy at least 70 percent of their enrichment requirements from DUE in the years they take the reduction. Additionally, DOE is negotiating other forms of near-term delivery relief with enrichment customers on SWU deliveries in fiscal years 1984, 1985, 1986 and 198[illegible] return for commitments to purchase 100 percent of requirements from DOE in the late 1980's and into the 1990's.

By taking these actions, DOE is effectively reducing excess enrichment inventories and near-term commitments. However, while resolving a major problem in enrichment, DOE is adding to the woes of the uranium industry. Relieved of their enrichment commitments, utilities will find they have no need for the associated natural uranium purchase commitments or inventories of U_3O_8 and natural UF_6 that were being held to meet these commitments. Thus, new sales of uranium inventories into the spot market can be expected and are occurring. Market supplies of uranium are thus increased at the same time demand is being reduced to the extent that relief has been granted by DOE on enrichment commitments. Further, the introduction of VTAO--a potential stimulus for uranium demand--has been delayed. Thus, the enrichment market is being brought quickly and decisively into balance while the problems of the uranium market and the domestic uranium industry are only exacerbated.

It is difficult to argue against DOE providing relief on enrichment services that its customers do not want and cannot use. The enrichment market must be brought into equilibrium. Otherwise, inventories will continue to be built up only to be disposed of at some later time in perhaps a more dramatic fashion. However, it is equally difficult to argue that the use of uranium be discouraged at a time when uranium is cheap and plentiful relative to enrichment and when the uranium industry is in distress.

The effect on the short-term market of making VTAO immediately available with no surcharge is difficult to ascertain. It would depend not only on spot uranium and conversion prices, but also on what utilities are paying for uranium and conversion already under contract. In addition, since utilities with AFC contracts already have a form of VTAO, the net effect would depend on the extent to which VTAO is already being used by these customers. However, the effect would certainly be positive with regard to maximizing uranium demand for those customers with Requirements contracts, and those contracts constitute at least 40 percent of all enrichment required in the next three years. In the absence of DOE's more detailed numbers, NRI estimates that a free VTAO instituted immediately might increase demand by some 15 million pounds between 1985 and 1989. This would be equal to about half the market's current unfilled requirements for that period, so the effect would not be insignificant.

Over the longer term, the effect of VTAO and the removal of the surcharge could have a significant impact on uranium demand. Evaluated at a 0.20w/o tails assay, commercial U.S. uranium requirements over the next 25 years will likely total over one billion (approximately 1.2 billion) pounds U_3O_8. If over this same time period the average optimal tails assay were 0.28w/o, uranium requirements would be increased by about 175 million pounds, or 7 million pounds per year. If the surcharge provision were not removed and the surcharge equalled the ceiling over this period, 75 million (3 million pounds/year) of this 175 million pound demand would be eliminated. If the average optimal tails assay were only 0.23w/o, uranium requirments would increase by about 63 million pounds, or 2.5 million pounds per year, over this period. A surcharge equal to the ceiling would, however, completely eliminate this extra demand.

Increasing uranium requirements, per se, may not always be a desirable objective. However, when such an increase is based on the relative costs of uranium feed and enrichment, it represents the most economical use of resources. It could be that in the longer term, when uranium resources become more scarce and their prices adjust accordingly, the optimal tails assay will be close to, or perhaps below, 0.20w/o. The problem is that as long as excess inventories overhang the market, there is little or no incentive for U.S. producers to make the investments necessary to supply the large amount of uranium needed in future years. As in the case with enrichment, the sooner these excess inventories are worked off and the market is brought back to equilibrium, the more stable the environment will be under which long-term production can proceed. Immediate use of VTAO for all customers and removal of the surcharge provision can help expedite the work-off of inventories.

Removal of the surcharge may even help DOE's marketing efforts. Currently, it is sound business practice for customers to contract for the 30 percent of their requirements from foreign enrichers as allowed in the US contract, in order to maintain some sort of cost control over DOE. Also DOE's foreign competitors offer VTAO for free (i.e., with no surcharge such as DOE's). A free VTAO also affords the customer some cost control over DOE in that uranium feed can be substituted for enrichment as the price of enrichment increases. With the surcharge in effect, customers pay even more when enrichment prices increase and they increase their tails assays to substitute uranium for enrichment. With no surcharge, DOE would have to be very conscious of controlling its costs because as the enrichment price increased, less enrichment services would be purchased. Utilities may be more willing to sign 100 percent contracts with DOE, at least during the next five or so years (the crucial time for DOE), if they had the ability to substitute cheap uranium feed for enrichment without paying a penalty for exercising this option.

There seems little question that DOE's current marketing efforts and its ability to recapture the last 30 percent of its business would be enhanced by a free VTAO made available immediately. Such a policy would also serve the current needs of the domestic uranium production industry.

SECTION 5

THE ISSUE OF MARGINAL PRICING BY DOE

5.1 DOE's Requirement to Revise Its Prices

In 1983 Dr. Shelby Brewer, DOE's then Assistant Secretary for Nuclear Energy, commissioned four individuals to study various aspects of the U.S. enrichment enterprise. One of these was Lelan F. Sillin, Jr., retired Chairman of the Board of Northeast Utilities. One of his recommendations (see Appendix B) was that DOE counter the threat to its business from discounted resales of SWU in the secondary market by selling part of its production at its marginal cost of production.[19] Such a marginal price has subsequently been estimated to be as low as $60.00/SWU.[20]

This scheme, which is also called "incremental" or "incentive" pricing within DOE, surfaced in the press in May 1984 when Mr. John Longenecker, DOE's Deputy Assistant Secretary for Uranium Enrichment, indicated that DOE might be willing to price SWU in FY-1987 and beyond on an incremental price basis.[20] This first story was followed up on June 18, 1984, with an even more forceful declaration of intent by Mr. Longenecker to internally study marginal pricing.[21] An internal memo from Mr. Longenecker to Mr. Joe LaGrone, Manager of Oak Ridge Operations, asking that marginal pricing be studied has also been circulated in the industry (Appendix C). DOE personnel have also stated independently that this is a program which DOE is "dedicated" to accomplishing.

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[19] In a letter from Mr. Lelan F. Sillin, Jr. to Dr. Shelby Brewer, dated February 28, 1984 Mr. Sillin proposed that offering SWU at a spot market price would "give DOE a close insight into that competitive market while, at the same time, providing a potential opportunity for generating additional dollars of revenue by selling SWU at a price that would cover more than out-of-pocket expenses..." (emphasis added).

[20] Nuclear Fuel, May 21, 1984, p. 1.

[21] Nuclear Fuel, June 18, 1984, p. 1.

Whether or not DOE offers marginal pricing, it is required to pass on to its customers any reductions in enrichment costs that occur. In the letter previously referenced from Dr. Brewer to Representative Richard L. Ottinger, Chairman of the Subcommittee on Energy Conservation and Power of the Committee on Energy and Commerce, Dr. Brewer explains DOE's logic in establishing its proposed new charge of $135.00 per SWU for sales under the US contract, the relevant portion of which is excerpted below:

> "...The revised prices reflect the Department's commitment to operate the enrichment program in a market responsive and cost-effective manner...
>
> ...For purposes of developing prices, the major assumptions are:
>
> Of the existing contracts, 75 percent will convert to the new US contract, and all of those who do convert, elect to purchase 70 percent of their requirements...[22]

DOE is required by law (the Omnibus Bill of 1970)[23] to recover all reasonable costs but not to make a profit. Paraphrasing Dr. Brewer's statements to Congress, DOE asserts that its price of $135.00/SWU is the full cost recovery price and, further, that its full costs will, by definition, be recovered once its marketing objective of 75 percent recapture under 70 percent contracts is achieved. But its market capture target is only 52.5 percent (75% of 70%) of its previous orders--a modest and achievable objective by any business standard. Assuming the validity of the $135 price (a subject which is being studied by Rep. Ottinger and the GAO) let it suffice to simply observe that once DOE passes the 52.5 percent point, all fixed costs are, by definition, recovered. Therefore, if the law requiring cost recovery-but-no-profit is not to be violated, every SWU sold after 52.5 percent of sales is booked must be sold at the incremental cost to produce these SWU. Thus, once the sales target is surpassed, DOE must either implement a two-tiered pricing scheme (one price covering fixed plus variable costs, the other covering only variable costs) or lower its overall price below the current $135.00/SWU.

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[22] Dr. Brewer's letter. op. cit.

[23] Public Law 91-560, 1970, Sec. 8.

Taking this logic a step further, when DOE officially passes the 70 percent point in recapturing its business, DOE's price could be affected two ways. First, the basic price of $135/SWU could be lowered since DOE would have surpassed its 52.5 percent sales target. Thus, if the marginal cost is $60/SWU, the new price would be the weighted average of the $135 price for 75 percent (52.5 ÷ 70) and the $60 marginal price for 25 percent (17.5 ÷ 70) of the price. On this basis, the new price would be $116.25/SWU. Second, DOE could still offer marginal price for the 30 percent which it had not captured as of that time.

It should be recognized that up to this point, DOE is experiencing considerable success in recapturing its old business under the new US contract. A number of companies have signed 100 percent contracts through 1989 and later (some through the mid-1990's) in return for immediate near-term relief from unneeded excess SWU purchase commitments in 1984, 1985 and 1986. Others, like Duke Power Company with the well-publicized first contract, have signed 100 percent contracts through 1989 in return for the ability to work off inventories in 1987 at a faster rate than the 30 percent in a standard contract. Finally, Mr. Longenecker has telexed DOE's customers asking for cooperation in rapidly concluding execution of the new US contracts by the end of this fiscal year.[24]

All these actions taken together signify that by October or November of 1984, DOE will be in a position to conclude it has succeeded in meeting its 52.5 percent objective and may even find it has enough signed contracts to surpass the 70 percent level. The only question then would be whether DOE should revise its overall price downward or maintain a two-tiered price. From a marketing standpoint, it would seem to be in DOE's best interest to offer the two-tiered price with the price for the first 70 percent at $135.00/SWU (or at a subsequently revised $116.25/SWU). The price for the last 30 percent would then be at DOE's marginal price level.

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[24] A copy of this telex is provided in Appendix D.

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A reasonable question is: how effective would be a decision by DOE to offer the last 30 percent of a US contract at a marginal price of $60/SWU? Would it result in DOE essentially recapturing its U.S. and foreign markets for enrichment services?

A $135/SWU price for the 70 percent minimum commitment and a $60/SWU marginal price for the last 30 percent, would in effect reduce the overall base cost to DOE's utility customers to $112.50/SWU in 1984 dollars. A utility with relatively cheap uranium planning to use VTAO at a 0.30w/o tails assay would incur a surcharge of up to another $9.45/SWU in 1984 dollars and would thus be looking at an overall base price of approximately $122.00/SWU. However, other terms and conditions in DOE's US contract such as firm-up lead times, feed delivery times, and payment terms cause this price to be viewed less favorably in comparison with DOE's primary foreign competitors. At an effective $125.00/SWU, DOE's price would be as much as 20 percent higher than its European competitors.

On the other hand, at a lower base price of $116.25/SWU for the first 70 percent and $60/SWU for the last 30 percent, DOE's overall price would drop to $99.38/SWU. With zero surcharge for VTAO, DOE's enrichment services would definitely be competitively priced relative to its foreign competition and DOE could legitimately expect to recapture the vast majority of its old domestic business as well as the bulk of its business in Japan, Korea and Taiwan, as well as enhance its prospects in Europe.

It should be noted that DOE is already well on its way to both the 52.5 percent and 70 percent market recapture. In the U.S. all but seven utilities with nine reactors have indicated plans to convert or have already signed contracts for at least 70 percent. Thus, in the U.S. DOE already has recaptured up to 72 percent (over 90 percent under perhaps an average 80 percent or better contract) of its previous customer base. The last seven utilities represent only 8,200 MWe of capacity out of a pojected US total of 102,000 MWe. One 933 MWe reactor is covered by an AFC contract which most likely will eventually be converted. The remaining eight reactors are covered by 3.5 year Requirements contracts which could choose to go completely foreign in the absence of price incentives from DOE like marginal price and free VTAO. On the other hand, those two adjustments alone should close any gap between DOE's price and those of its foreign competitors sufficiently to convince all but the most intransigent domestic customer to stay at home.

Among DOE's foreign customers, utilities in Egypt, Korea, Mexico, Spain, Taiwan and almost all of Japan have indicated intentions to convert, assuming negotiations are successfully concluded, to at least 70 percent contracts. Some of those contracts will be for higher percentages in return for near-term relief. DOE's biggest problem area is clearly in Europe. The positions of four operating reactors in Brazil, the Philippines, South Africa and one planned in Thailand are also unclear at this time. Nevertheless, with the expressions of intent DOE already has in hand, it can be assured of also exceeding the 52.5 percent target with its foreign customers. Thus, it would seem that DOE would have no choice but to implement marginal pricing and there seems to be little question that at $60/SWU, DOE would be extremely successful at recapturing not only its base load and most of the domestic Requirements contract hold-outs, but also the vast amount of business still uncommitted for the last 30 percent.

Even if DOE were to hold its $135/SWU price for the 17.5 percent difference between 52.5 percent and the 70 percent level (given that it has already recaptured better than its target under 70 percent contracts), a marginal price of $60/SWU would be very successful at recapturing most of the last 30 percent of the business. DOE might lose a few 3.5-year Requirements customers and a few more foreign customers, but the effect would not be so great as to significantly alter the basic results of such a policy. As will be noted next, holding the $135/SWU price for the 70 percent portion would generate considerable revenues with which DOE could purchase uranium needed for split-tails from private industry.

5.2 Using Marginal Price to Help the Domestic Uranium Industry

Given that DOE would be extremely successful with a marginal price of $60/SWU on the last 30 percent of its market, legitimate questions would be: Is it necessary for DOE to go so low? Or, is the $60/SWU overkill?

A good argument can be made that to capture the bulk of the business among the last 30 percent, an incentive price of $95/SWU might be just as effective for DOE as $60/SWU. In that case, there would be $35/SWU of disposable income DOE would collect. For a total sales level of 14 million SWU per year (DOE's assumed average annual civilian requirement for the next 10 years), the 30 percent amount would be 4.2 million SWU per year. If DOE were to overcollect $35/SWU on 4.2 million SWU, that would be $147 million available for other purposes. DOE should commit to use that money to purchase additional feed for its split-tails operation on the domestic open market. At a price of $50.00/kgU, DOE could purchase some 3.0 million kilograms per year of uranium as natural UF_6. This would mean that U.S. uranium sellers could sell some 7.8 million pounds U_3O_8 and domestic convertors a corresponding amount of conversion business.

If DOE were to charge $135/SWU for the entire 70 percent portion then, under the marginal price logic presented earlier, DOE would also overcollect on the 17.5 percent portion of sales between 52.5 and 70 percent. This overcharge would amount to another $13.12/SWU on all SWU's sold. On sales of 14 million SWU's, this would thus represent another $183 million. At $50/KgU, $183 million would buy 3.7 million kgU as UF_6 (9.5 million pounds U_3O_8) requiring a corresponding amount of conversion.

The total spot market in 1981 and 1982 at its peak of activity was 10 to 11 million pounds U_3O_8. The extra feed DOE will need for split-tails varies between 7.7 and 14.4 million pounds U_3O_8 per year between 1985 and 1989 with the highest values (11.7 and 14.4 lbs U_3O_8/yr.) in 1985 and 1986. The two methods described above, when combined, would produce more than sufficient revenues for DOE to finance its extra feed requirements on the open market and DOE should do this. All such purchases by DOE should be through competitive bidding limited to U.S. companies selling uranium produced in the United States.

Obviously there are pros and cons to this approach. Admittedly, DOE's utility customers would be financing these purchases with indirect subsidies in the SWU price. An effective counter-argument can be made, however, that many utilities would find this an effective way of buying domestic U_3O_8 under the equivalent of assured long-term contracts. With the current spot price of U_3O_8 in the \$17-20/lb. U_3O_8 range, the only conventional mining companies that can compete viably for the business are foreign producers with low-cost, high-grade deposits. The most efficient domestic conventional producers need a base price at least in the range of \$25-\$35/lb. U_3O_8 to compete and survive.

One of the most obvious direct results of a DOE competitive bidding purchase plan as proposed would be to absorb the enormous inventory overhang that keeps the spot price of uranium so depressed--an overhang which is being exacerbated and made more fluid by DOE's current SWU relief program being granted during the AFC-to-US contract conversion process. The natural result of the accelerated inventory absorption would be that spot prices would rise sooner than otherwise. The sooner the spot price can rise to the base levels needed by the U.S. uranium production industry, the sooner the industry can begin its recovery.

Even if the domestic utilities can see the restoration of the U.S. uranium production industry as being in their best long-term interests, it's not at all obvious that DOE's foreign customers would share similar sentiments. Nor, should they be expected to. Therefore, DOE might well expect resistance by its foreign customers to allocating some increment of the SWU price they pay to support the U.S. uranium production industry. It would seem reasonable, in that case, for DOE to exclude the adjustment to marginal price for domestic uranium purchases from the price it charges its foreign customers. Thus, DOE's foreign customers would see a 1985 price of \$99.38/SWU--a price low enough for DOE to stand toe-to-toe in direct competition with its foreign competitors. In this way, DOE would maintain its foreign sales base and the U.S. Government's concommittant position in the international non-proliferation regime.

Section 6

OTHER DOE RELATED ISSUES AFFECTING THE U.S. URANIUM PRODUCTION INDUSTRY

6.1 Long-Term Funding for DOE's Enrichment Operations

Starting in the mid-1970's a question has continuously been raised at irregular intervals of whether DOE should not have some means of financing capital expansions and research and development activities other than out of annual cash receipts. Proposals were made several times to Congress in the late-1970's for a "Revolving Fund", but nothing ever came of them. In the early-1980's DOE appeared to give up the effort and not much has been heard publicly from DOE in recent years on the need for such separate financing. Nevertheless, the issue is real and should still be of concern to the management of DOE's Uranium Enrichment Operations.

NRI believes that some form of separate long-term borrowing capability should be permitted DOE's enrichment enterprise. Just as it is unrealistic to expect employees of a business to finance the purchase of their homes out of one year's salary, so also is it unrealistic to expect DOE or any private business entity to finance billion dollar contruction programs on a real time basis solely out of annual cash receipts from the sale of SWU's. This is particularly true in an environment of intense price competition as currently prevails in the market for enrichment services.

Some form of long-term funding might well provide DOE with the extra measure of pricing flexibility that could permit a significant recapture of previously lost business. NRI, therefore, recommends that DOE develop some proposals for independent financing and submit them to Congress for approval after review and approval by the industry.

6.2 Representation of Uranium Within DOE

DOE's enrichment enterprise is directed by a Deputy Assistant Secretary for Uranium Enrichment Operations within the Office of Nuclear Energy. The domestic uranium production industry, however, currently has no similar voice in that part of DOE which makes policy decisions. While the Energy Information Administration (EIA) within DOE monitors the uranium industry, EIA has no policy making authority. Aside from its ongoing data collection activity, EIA can only respond to requests to do studies; it cannot initiate them itself. For example, apparently nobody requested EIA to study the impact on the uranium market of utilities converting to the new Utility Services (US) enrichment contract before DOE introduced the contract. Thus, it is clear that uranium has no effective policy representation within DOE.

DOE needs an integrated policy toward both uranium and enrichment. It does not make any sense for DOE to adopt policies in enrichment that are injurious or not beneficial to the uranium industry while at the same time being responsible for the viability of the domestic uranium industry, as is currently the case.

It is recommended that DOE establish a Deputy Assistant Secretary for Uranium Supply within the Office of Nuclear Energy. Creating such a position would ensure that uranium will have representation in policy decisions. The uranium data collection and analysis functions can continue to reside within EIA as long as sufficient funding is provided for these functions. The Deputy Assistant Secretary for Uranium Supply would be kept apprised of the status of the domestic uranium industry and market by EIA and be in a position to request studies by EIA on the impact of DOE policies on the uranium industry. Most importantly, the Deputy Assistant Secretary would have to be consulted on matters which affect uranium and would have a say in the decision making process. The Secretary of Energy, in turn, would have a balanced input for his decisions.

6.3 Future DOE Enrichment Technology

Future enrichment technology choices by DOE could have a significant impact on uranium requirements and even change the basic economics of uranium supply. The most striking example of this potential impact is represented by the use of laser technology for enrichment. DOE is currently evaluating the Atomic Vapor Laser Isotope Separation (AVLIS) process to provide future enrichment services. The prospect that AVLIS has a separation potential that allows it to enrich at a tails assay as low as 0.05w/o has significant implications as far as uranium supply and demand are concerned.

First, the lower the operating tails assay, the less uranium feed that is required in the production of enriched product. Thus, uranium requirements could be drastically reduced. Second, the ability to enrich at such a low tails assay would make the large amount of depleted uranium owned by DOE a potential source of economical uranium supply. As of June 30, 1984, DOE had 231,000 metric tons of depleted uranium at assays ranging between 0.20w/o and 0.30w/o. To the extent that the separation potential of laser enrichment is below 0.20w/o, existing tails can be upgraded through the enrichment process to the assay at which uranium is found in nature (0.711w/o). In this process the tails are "stripped" down to the operating tails assay of the laser process with the product being natural uranium. Over 80,000 short tons equivalent U_3O_8 could be created in this way based on the weighted average assay of 0.226w/o for the depleted uranium owned by DOE and the ALVIS operating at a 0.05w/o tails assay.

Since the selection of enrichment technology can have such a large effect on uranium, it is recommended that once a selection is made, DOE give the domestic uranium industry as much advance warning as possible with regard to its planned operating tails and its intentions concerning the use of depleted uranium. The Deputy Assistant Secretary for Uranium Supply, suggested above, could ensure that the industry would be kept apprised on the potential impacts of the technology choice. It is not suggested that DOE avoid any technology that would reduce uranium demand, but that the industry be notified of DOE operating intentions in order that the proper level of future investments can be made.

Section 7

CONCLUSION

7.1 Summary

Congressional concern over the viability of the domestic uranium industry resulted in the passage of legislation that required DOE to prepare a comprehensive review of the domestic uranium industry as well as to report annually for the next ten years on the viability of the industry. The comprehensive review recently prepared by DOE reflects the industry status as of the end of 1982 and thus does not accurately depict the far more distressed state of the industry that exists today. Estimated 1984 U.S. uranium production will be 30 percent less than 1983 production and only about 40 percent of U.S. requirements. In addition, the spot uranium price in real terms is at its lowest level in over 10 years, further confirming the depressed state of the uranium market and making long-term contracting practically impossible.

It must be objectively recognized that past DOE policies in enrichment have, in fact, greatly contributed to the present malaise in the uranium industry as well as the recent woes in DOE's own enrichment business. In 1984 DOE has been aggressively and, it appears, effectively trying to remedy its own situation with the introduction of the Utility Services (US) enrichment contract and changes in its operating and accounting procedures. However, in the process of addressing its own problems, DOE has essentially ignored the problems of the domestic uranium industry. Further, DOE's solutions for enrichment actually exacerbate the near-term problems in uranium.

The lack of a coordinated approach toward both enrichment and uranium is far different from the integrated approach taken in the past when issues concerning uranium and enrichment were evaluated on a more equal footing within the government. This development is especially alarming when it is recognized that (1) Congress has given DOE the responsibility for assuring the viability of the domestic uranium industry and (2) DOE's enrichment policies can be structured to either benefit or harm the industry.

The way DOE's enrichment policy is currently being formulated, the domestic uranium production industry comes out a double loser. DOE is revaluing its uranium stockpile at its original purchase cost in the 1960's (half the current market value) then drawing from its stockpile extra feed for a split-tails mode of operation. In reducing the cost of SWU's by substituting cheap uranium for expensive electricity through split-tails, DOE is creating a new form of demand. However, by drawing upon its stockpile, DOE is precluding the domestic production industry from participating in the program.

At the same time, while putting VTAO in its new contract, DOE is not making VTAO immediately available to all customers, not making the VTAO upper limit high enough, and imposing a surcharge when VTAO does become universally available. The end result is to limit the use of uranium by DOE's customers to lower levels than would otherwise apply. Thus, uranium is being penalized by DOE's new contractual terms on the one hand without enjoying the potential compensating adjustment inherent in DOE's new operational mode on the other.

Finally, DOE has opted to sacrifice its near-term sales during negotiations of conversions to the US contract in return for securing additional SWU sales (in the form of "100 percent contracts") for the future. The significance of DOE taking such an approach should be made clear. First, DOE is, in fact, sacrificing near-term SWU sales. Second, in so doing, DOE is not only not helping solve the near-term problems of the domestic uranium industry but is actually exacerbating the industry's problems as it supplements its own future enrichment business. If DOE through its enrichment operations is providing a service to the country and is at the same time responsible for assuring long-term supplies of uranium, it should not be enhancing the long-term sales of one at the expense of the near-term needs of the other. DOE should be moving aggressively, as it is, to streamline its operations, cut costs, and maximize its market share. But DOE should also take steps to avoid further endangering the survival of the domestic uranium industry in the process.

DOE should at least compensate for the negative effects on the uranium industry of its near term SWU relief program by allowing immediate, free, and unrestricted VTAO and by buying its supplemental feed for split-tails from the open market. These are only small adjustments when viewed in the total context of all the strong positive changes DOE has made, and is still contemplating making, in the management of its enrichment enterprise. As such they are emminently do-able and should be incorporated into the overall program now while DOE is firming up its basic future policies.

The need for a comprehensive approach to solving uranium's problems has never been greater and should be addressed in a forthright and effective manner. If the domestic uranium production industry could provide the extra feed needed for DOE's split-tails program, it would significantly improve the current severely depressed state of the industry and its prices. Higher spot prices for uranium would lead, in turn, to a resumption of long-term contracting by U.S. utilities with domestic uranium producers at price levels which would support a more viable production industry.

7.2 Recommendations

DOE needs to take an integrated approach to uranium and enrichment due to the fact that uranium and enrichment are to a degree substitutable and the Government has the responsibility to ensure that the nation's resources are efficiently used. It is important that a review of DOE's present and proposed contractual and operational policies in enrichment be conducted to determine whether these policies confirm to past and present Congressional mandates with regard to uranium and enrichment. The specific policies which must be reviewed include:

- the proposed split-tails operation of the enrichment plants and the future use of the government's uranium stockpile;
- the use of the variable tails assay option (VTAO) in the Utility Services (US) enrichment contract;
- the possible use of marginal pricing scheme in selling enrichment services; and
- funding of enrichment research and development and capital expansion, and choices concerning future enrichment technology.

With regard to split-tails operation and the government's stockpile of uranium, DOE should consider the following recommendations:

- the DOE enrichment plants should be operated at a tails assay at least as high as the weighted average transaction tails assay selected by its customers. This would prevent DOE from building up further inventories of natural uranium and using more electricity than necessary while reducing DOE's cash flow requirements;
- DOE should consider operating its plants at a tails assay higher than the weighted average transaction tails assay (i.e., operate in a split-tails mode);

- DOE should accomplish this goal by setting the marginal price level not necessarily at its lowest possible level but at such a higher level which would allow DOE to (1) effectively capture its enrichment sales and (2) to collect additional revenue to finance the purchase of domestic-origin uranium for a split-tails program; and

- Foreign customers of DOE should not be expected to help finance the viability of the U.S. uranium production industry through their purchases of SWU from DOE. Therefore, the lower true marginal price, unadjusted for purchases of domestic uranium should be charged to foreign customers. With an unadjusted marginal price of $60/SWU, DOE's overall price for foreign sales would be $99.38/SWU--low enough to compete effectively anywhere in the world.

Other recommendations include:

- an improved procedure for funding of DOE's research, development, and capital expansion in enrichment;

- establishing the position of a Deputy Assistant Secretary for Uranium Supply in the Office of Nuclear Energy in order that uranium interests be properly considered in future policy decisions; and

- apprising the domestic uranium industry of the ways in which future enrichment technology choices will affect uranium requirements and supply.

- The additional uranium needed for a split-tails operational mode should be purchased under competitive bidding in the spot market from domestic sources selling uranium produced in the U.S. In making this decision, DOE should consider the relative costs of electricity and uranium in selecting the optimum operating tails assay and, in turn, the amount of uranium to be purchased in each year; and

- DOE should designate the current uranium stockpile a national reserve which should be frozen at its current level until (1) a decision is reached on the optimum level of this stockpile based upon the future needs for Government applications, and (2) the desired level of U.S. uranium production for viability is established.

With respect to VTAO, DOE should consider the following recommendations:

- removal of the surcharge provision on the use of VTAO in order that the relative prices of uranium and enrichment not be distorted, ensuring an economically efficient use of each;

- make VTAO immediately available to all customers to provide a stimulus for uranium demand while the market is so depressed; and

- make VTAO available in the range of 0.20w/o to 0.35w/o, instead of the current upper limit of 0.30w/o.

On marginal pricing of DOE's enrichment services:

- DOE should implement marginal pricing to recaptur and hold onto as much as possible of its previous business;

- In implementing marginal pricing, DOE should do it in such a way as to benefit both near-term as well as long-term sales of U.S. enrichment and uranium;

Department of Energy
Washington, D.C. 20585

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Energy Conservation and Power

April 3, 1984

Honorable Richard L. Ottinger
Chairman, Subcommittee on Energy
Conservation and Power
Committee on Energy and Commerce
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

The Department of Energy (DOE) plans to announce on April 4, 1984, updated charges for uranium enrichment services. The current charges are $138.65 per separative work unit (SWU) under Long-Term Fixed-Commitment (LTFC) and Adjustable Fixed-Commitment (AFC) contracts and $149.85 per SWU under Requirements contracts. The proposed new charges are $135.00 per SWU for the Utility Services (US) contract, $153.00 per SWU for Fixed-Commitment contracts, and $157.00 per SWU for Requirements contracts.

The revised prices reflect the Department's commitment to operate the enrichment program in a market responsive and cost effective manner. As a first step in this process, we have proposed in our FY 1985 budget: (1) a deferral of construction of Gas Centrifuge Enrichment Plant (GCEP) Buildings 3 and 4, (2) reduced production rates of Set III centrifuges, (3) termination of Set IV centrifuges with acceleration of development of Set V machines, (4) advanced technology selection in mid-1985, and (5) efforts to negotiate lower prices for electric power.

For purposes of developing prices, the major assumptions are:

- Of the existing contracts, 75 percent will convert to the new US contract, and all of those who do convert, elect to purchase 70 percent of their requirements.
- Costs for a four building GCEP be included with Set III centrifuges initially filling one-half of the first process building. This assumption is conservative (for purposes of developing prices from enterprise costs and staying at or below the ceiling), since it provides for completing GCEP on a stretched scheduled if private sector financing cannot be implemented and since the projected cost of an Atomic Vapor Laser Isotope Separation (AVLIS) plant is lower than the cost of a four building GCEP. It should be understood that the decision on what type of new capacity to introduce has not been made. Rather a four building GCEP is assumed in the pricing calculation for conservatism.
- No relief from Tennessee Valley Authority (TVA) capacity charges. Despite our recent attempts to obtain lower electrical costs from TVA, we would not be conservative if we assume relief from these charges.
- All costs are in 1985 dollars.

The revised prices also reflect certain accounting changes in the valuation of uranium inventories and in the depreciation of the gaseous diffusion plants. These changes result from an evaluation of our accounting practices that was performed by Arthur Andersen and Company.

Arthur Andersen and Company recommended that DOE adopt generally-accepted accounting principles commonly used in the private sector, which provide for the exclusion of costs that have no economic value in the marketplace in the determination of the costs of a product or service. In our particular set of circumstances, we have adopted these principles by

a. Valuing our uranium feed inventories in our price calculation at purchase price rather than at current market value. Since we have been imputing interest in the rate base on our feed inventory since 1979, it seems appropriate to value our feed at its original price. This valuation is for accounting purposes only and does not imply that DOE intends to sell its inventories in competition with the private sector.

b. Including depreciation in the price calculation only on that percentage of gaseous diffusion plant capacity that is currently in use. This practice was followed in the early years of U.S. toll enriching and is consistent with standard business practices.

Both changes have the effect of keeping our enrichment service price in the competitive range while meeting the legislative intent of the Atomic Energy Act and the enrichment pricing criteria to recover the Government's cost over a reasonable period of time.

Risk Factors

DOE has, since 1972, experienced slippages in sales estimates in excess of those used in developing operating plans and base prices. These slippages result in increasing unit costs for separative work since there are less units of sales to recover the fixed costs of production. Because the slippages have varied between contract type, a risk surcharge has been included in pricing to assure an equitable distribution of costs. The principle of recognizing risk differential between contract types has been consistently applied. The Requirements contract price has had a risk factor since 1972 when the first new contract type, the Fixed-Commitment contract, was introduced. The risk factor is based on a percentage slippage in sales. This percentage is then applied to fixed cost of production to arrive at a risk surcharge.

Previously there was no risk factor associated with the Fixed-Commitment contract. However, the most recent annual forecast of sales shows for the first time a significant slippage in sales under Fixed-Commitment contracts. The principle of recognizing a risk differential between contract types needs to recognize the increase in unit cost of production that results from Fixed-Commitment contract slippages. Accordingly, a risk surcharge is now required for Fixed-Commitment contract purchases.

In arriving at a percentage loss in sales, we have continued the practice, used since 1972, of comparing our most recent projection of sales by contract type to the forecast made 1 year earlier. Under this year's calculation, Requirements contracts had slipped by about 50 percent and Fixed-Commitment by about 30 percent. Applying these percentages to the fixed cost of production, risk factors of 19 and 16 percent, respectively, were obtained.

The resulting prices are $157 per SWU for Requirement contracts and $153 per SWU for Fixed-Commitment contracts. A provision in the Requirements contracts limits the amount to be charged under the contract to the calculated charge or a ceiling charge, whichever is lower. The ceiling charge is expected to be lower than the calculated charge at the time this charge would be effective. The Requirements contract price of $157 per SWU or the ceiling charge will become effective on October 1, 1984. The $153 per SWU charge for Fixed-Commitment contracts will become effective on October 1, 1984.

At this time there is no basis for assigning a risk factor to the Utility Services (US) contract which is a new contract type. The charge for SWU furnished pursuant to the US contract is $135. The charge per SWU furnished under other than Requirements or Fixed-Commitment contracts will be $135. These prices will be published in the Federal Register on April 4, 1984, and will be effective for deliveries taken after October 1, 1984. If you would like additional information or a briefing on this subject, please contact me.

Sincerely,

Shelby T Brewer

Shelby T. Brewer
Assistant Secretary
for Nuclear Energy

cc:
Honorable Carlos J. Moorhead
Ranking Minority Member
Subcommittee on Energy
Conservation and Power
Committee on Energy and Commerce
House of Representatives
Washington, D.C. 20515

LELAN F. SILLIN, JR.
P.O. Box 270
Hartford, Connecticut 06101

February 28, 1984

Dr. Shelby T. Brewer
Assistant Secretary for
Nuclear Energy
U. S. Department of Energy
Mail Stop 1-Forrestal
Washington, D. C. 20585

Dear Dr. Brewer:

On February 10, Messrs. John Simpson, Manson Benedict, Don Kane and myself (four consultants engaged by you in 1983) met with you and Messrs. John Longenecker, Gene Schmitt and Nort Haberman of the Department of Energy (DOE) to review the initiatives DOE was taking to improve its Uranium Enrichment Enterprise. The meeting had been arranged by Mr. Longenecker so the consultants, who had submitted their final reports to DOE at the end of 1983, could be updated on the steps now being taken by the Department.

The mission, which had been assigned to the consultants in 1983, was to review the U.S. Enrichment Enterprise and to comment on changes needed to enhance its prospects. You will recall my primary responsibility was to report to DOE on the market outlook and suggest areas of change that might improve the enrichment enterprise's market share and its financial prospects. I submitted recommendations regarding marketing, pricing, costs and financing, and contract terms.

At the February 10 meeting, you and Mr. Longenecker reviewed the principle terms of the new contract that has been offered to your customers, including the terms under which present customers are encouraged, prior to October 1, 1984, to convert their existing contracts. Your review included discussion of the new terms and conditions, price, the enrichment enterprise's cost-containment program and the various marketing activities which it has undertaken. We also reviewed projected enrichment costs and DOE SWU sales--comparing your current 1984 plan with DOE's December 1982 projected sales and operating costs. Finally, you discussed your plans for making a decision in 1985 with regard to the advanced gas centrifuge (AGC) or laser isotope separation (AVLIS) processes. You also furnished us with a copy of the 1985 Congressional Budget Program Overview for Uranium Enrichment. Subsequent to the meeting, I reviewed the 1985 congressional budget overview material.

I appreciate that the enterprise's financial outlook is, in considerable measure, dependent upon its success in securing acceptance by its customers of the new contract, together with the commitment by such customers for at least 70 percent of their enrichment requirements. Since you are in the early stage of market reaction to the new contract, there is some uncertainty as to the percent of customers that will convert.

Based upon the work done for you last year, I believe DOE, in the new contract, has made a proposal that should prove attractive to its customers. In my opinion, DOE has been responsive to market conditions by offering customers terms and conditions which better match the utilities' requirements for enrichment services. The proposal will, I believe, improve your customer's confidence in the viability of the enterprise because of the disciplines you have introduced which should assure better cost containment and enable DOE to provide a more competitive price for its services. In moving to a requirements-type contract and allowing customers access to the secondary market, (i.e., at least 70 percent requirements from DOE, and up to 30 percent from other sources) the prospects are enhanced to reduce the inventory in the secondary market, improve DOE's ability to estimate the size of its markets and improve the enterprise's projected revenues. I anticipate that domestic utilities will respond favorably to your present offer and conclude that it is not unreasonable, for your financial planning purposes, to assume that the 75 percent targeted level of conversions will be achieved.

I concur with DOE's plans to reduce the power requirements at its gaseous diffusion plants as one element of its cost-containment program, and agree it should continue to pursue discussions with TVA for some relief under the conditions of the existing take-or-pay contracts. I also concur with the plans to limit the number of gas centrifuge (GCEP) Set III machines that you will be installing at this time. The latter decision is appropriate in view of the worldwide excess capacity; the low-cost SWUs that are available; DOE's inability to fund the cost of such expansion from current revenues; and the earlier decision you propose to make on the advanced technologies.

Since the consultants had recognized that the key to the recovery of the enterprise's worldwide leadership depended upon substantial lower cost advanced technologies, I was encouraged that you are continuing the work on both the advanced gas centrifuge (AGC) and laser isotope (AVLIS) technologies.

I know you recognize that there is a greater risk involved by advancing the time of your decision (from 1987 to 1985) on these two advanced technologies. From our discussion and the comments of Messrs. Benedict and Simpson, I believe your plans provide for a comprehensive, disciplined analysis that will minimize the risk and should allow for a sound decision to be made in the earlier time frame.

One caveat that stemmed from the discussion is: Since the work on the AGC seems to be more advanced and, most particularly, since funds have been expended for buildings as part of the gas centrifuge program, these sunk costs may result in a financial bias favoring the AGC. I am satisfied, however, that you are aware of this factor and will be making every effort to ensure that both technologies are, in fact, objectively evaluated prior to reaching a final decision.

While I believe the steps you have taken do provide a greater assurance for managing the enterprise and do significantly improve its viability, I urge you to continue to examine the funding issue which will be presented when the decision on the advanced technologies is made in 1985. It is unlikely that the capital dollars required will be available from revenues and/or be within the price structure to which the enterprise is committed. As the work progresses on the 1985 technological decision, the financing plan should be studied also. If there is no government funding, then some outside financing will be required and perhaps the subject of privitization of the enrichment enterprise must be concluded. It is not too early for the analysis of this policy issue to be undertaken so recommendations can be made and timely decisions reached with regard to the choice of technologies.

Assuming, as I do, that the proposed new contract will have broad market acceptance and your targeted objective for conversion of existing contracts will be achieved by October 1, 1984, I also urge that DOE continue to strengthen its marketing capabilities. The DOE should be in a position to evaluate the opportunity it may have to compete for the 30 percent of requirements that customers are likely to hold back on, because they will see it as an opportunity to pursue the spot-market. The DOE should examine the benefits that might accrue by offering SWUs to customers in competition with the spot-market. This would give DOE a close insight into that competitive market while, at the same time, providing a potential opportunity for generating additional dollars of revenue by selling SWUs at a price that would cover more than out-of-pocket expenses. I realize at this time it is too early to make any such determination, but the Department should have an ongoing program to examine this and other aspects of the market to assure the Department's ability to maximize benefits to the enterprise if conditions warrant.

Dr. Shelby T. Brewer
February 28, 1984
Page 4

In summary, I endorse your present initiatives. The new contract should achieve your targeted conversion, enhance the outlook for retention of customers and reduce the threat to the enterprise from the present secondary market. The market outlook, together with your cost-containment programs and plans for the advanced technologies, will significantly improve the enterprise's confidence that it will overcome the near-term threats to its viability that were posed in 1983. The present outlook is in sharp contrast to the conditions that existed at the time you engaged the consultants to review the situation with you. While indeed much remains to be accomplished, I do commend you, Mr. Longenecker and those involved in the enrichment enterprise for the steps being taken and encourage you to maintain your present course.

Yours sincerely,

Lelan F. Sillin, Jr.

c: J. Longenecker
M. Benedict
D. Kane
J. Simpson

JUN 14 1984

NE-30

Marginal Pricing of Enrichment Services

J. La Grone, Manager, Oak Ridge Operations Office

During the evaluation of the uranium enrichment enterprise last year, one of the consultants recommended that DOE evaluate marginal pricing as a means for enhancing our competitiveness with other primary suppliers and increasing our market share. We have also received customer feedback that is supportive of this pricing scheme. I endorse this concept in principle and would like your staff to join with us in an evaluation of the legal and programmatic implications of marginal pricing. We have already initiated the review at Headquarters and Sherry Peske will serve as my principal contact on this issue.

Original Signed By
John R. Longenecker
John R. Longenecker
Deputy Assistant Secretary
for Uranium Enrichment
Office of Nuclear Energy

CC:
S. Peske

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CONCURRENCES

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DATE	6/14/84
RTG. SYMBOL	NE-32
INITIALS/SIG.	Peske
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To:
From John R. Longenecker
Deputy Assistant
Department of Energy
Received by telex 8-23-84

We are now entering the final portion of the conversion period to the Utility Services contract. Customer response to the contract has been very encouraging to date, and we intend to complete the conversion process by September 30, 1984. I appreciate the cooperation of you and your staff to date, and I would ask for your assistance in assuring that the negotiations are concluded and contracts executed prior to September 30, 1984. Your cooperation is especially crucial in assuring that conversion arrangements are expeditiously completed. The Department of Energy must finalize all negotiations as soon as possible because completion of the conversion process, including execution of the US contract by September 30, 1984, is crucial to the process of evaluating future operational decisions and preparing our FY 85 budget submission to Congress. The sooner we develop firm demand estimates, the sooner we can make appropriate production decisions and optimize our overall strategy. Thus, prompt completion of conversion to the US contract by September 30, 1984, is mandatory for the efficiency of our operation and should result in lower future costs to you. To assure that arrangements for conversion are completed by September 30, 1984, we are willing to meet with your staff, provide additional information, or take other steps as required. If you have specific issues that you would like to discuss directly with me, please give me a call.

1984 URANIUM IMPORTS
December 1984

Quantity (lbs) Imported Under Contracts
To Date in 1984

COMPANY	POUNDS	PRICE/lb.
Eldorado Resources	650,000	$20.05
Eldorado Resources	750,000#	15.46
SMDC	200,000#	18.00
SMDC	1,000,000*	unknown
Uranerz	110,000*	24.00
AGIP	70,000*	24.26
AGIP	42,000	15.84
Rio Algom	1,500,000*	unknown
Uranerz	400,000	24.00
AGIP	700,000#	unknown
Uranerz	300,000#	18.50
AGIP	1,600,000*	16.00
Uranerz	100,000	22.00
SMDC	100,000#	unknown
Eldorado Resources	500,000#	unknown
Uranerz	250,000	24.00
AGIP	238,000	unknown
SMDC	400,000*	15.68
Uranerz	60,000#	20.00
Total	150,000	21.00
Nufcor	1,000,000*	unknown
AGIP	51,000	unknown
Uranerz	500,000	24.00
TOTAL	12,797,000	

Definition

Eldorado Resources (Canadian Government Corporation)

SMDC - Saskatchewan Mining Development Corporation (Province of Saskatchewan Corporation; Canada)

Uranerz - Uranerz Exploration & Mining, Ltd. (Canada)

AGIP -Italian Government Mining Corporation

Nufcor - South African Government Marketing Corporation

* Denotes long-term uranium supply contract. Signed during 1984.

Source: NUEXCO, December 6, 1984

DOE operating plan

Interim Working Scenarios

I. INTRODUCTION

Each year, the Department of Energy (DOE) develops a uranium enrichment operating plan to satisfy near- and long-term planning and budget requirements. The operating plan historically has served as one of the principal backup items to the DOE budget submission to Congress. However, as discussed below, a revised long-range operating plan will not be completed until early FY 1985 pending identification of customer response to initiatives undertaken by DOE for the purpose of stabilizing demand on the DOE enrichment complex. In its stead, however, interim working scenarios have been developed to serve as the basis for developing a FY 1985 price, for use in program planning, preparing the DOE Materials Management Plan, and for use in discussions regarding near-term budgets and strategies.

Over the last several years, the DOE share of the world enrichment services market has dropped significantly. A worldwide glut of enriched uranium, the emergence of a secondary market of relatively low-priced enrichment services, the perception that DOE's existing contracts were too inflexible, and the drastic change in currency exchange rates have adversely impacted DOE's ability to be a competitive supplier. Over the past year, DOE analyzed this situation carefully and developed a strategy to improve its market position. Our current strategy is to stabilize DOE's market share, to provide for an orderly drawdown of excess inventories of enriched uranium in the marketplace, and to stem the tide of customers who are going elsewhere for their enrichment services. In short, we intend to compete effectively in the international marketplace.

The strategy that DOE has developed is one that responds to current market conditions by issuing a new contract with more attractive prices and terms to its customers, taking steps to improve customer relations, taking actions to improve efficiency of all enrichment operations and allowing the market response to the new contract to drive decisions on investments for new capacity and research and development.

On January 18, 1984, DOE issued the new Utility Services (US) contract. This contract offers several competitive features, including a lower price with a long-term price ceiling, the ability to purchase a portion of enrichment requirements from any source--including DOE, foreign suppliers, or the secondary market--and ordering and delivery provisions that are substantially more flexible than those of the current contracts. Existing customers have until October 1, 1984, to convert to the new contract.

The market response to the US contract will be critical in determining future gaseous diffusion plant (GDP) power and production levels, future investments in more cost efficient advanced technology to replace existing capacity, and research and development expenditures. As market data are obtained from customer response to the new contract, we will adjust our long-range plans accordingly. Because of the wide range of possible customer responses to the US contract and the effect thereof, the Annual Long-Range Operating Plan will not be updated until after completion of the contract conversion process. However, two alternative working scenarios have been developed for use in planning in the interim.

II. ELEMENTS OF AN OPERATING PLAN

The major elements of the enrichment operating plan are: (1) demand, including civilian and Government requirements as well as the need to maintain minimum working inventories; and (2) supply, including use of existing natural and enriched uranium stockpiles; production from existing gaseous diffusion facilities; and potential production from advanced technology projects.

A. Enrichment Demand

Enrichment demand has three components; i.e., the needs of the civilian nuclear power industry, Government requirements, and DOE inventory requirements.

1. Enrichment Services Demand

The civilian demand for enrichment services will be driven by three factors. One is the rate at which nuclear power plants are brought on line. The second is how well the operating nuclear power plants perform. The third is what portion of the enrichment services market will be served directly by DOE. The DOE share of the enrichment services market has eroded substantially in recent years. The primary causes of this market erosion are: (1) large inventories of enriched uranium that have accumulated worldwide and the availability of a substantial portion of the separative work contained in these inventories at very low prices, and; (2) lower prices offered by foreign enrichers, particularly in view of current currency exchange rates where competitor currencies are very weak relative to the U.S. dollar. DOE's share of the enrichment services market is the major uncertainty at this time, but customer response to the new US contract will define the demand on the U.S. enrichment complex.

The base civilian demand is predicated upon the mid-1983 uranium enrichment "most likely" forecast of nuclear power growth to be serviced by DOE. This forecast is summarized in Table 1. Our forecast of domestic nuclear capacity agrees favorably with the May 1984 Energy Information Administration (EIA) "mid" forecast and thus, we believe, provides a reasonable planning base. Specifically, the 1984 EIA midcase assumes for U.S. capacity 85,000 megawatts by 1985, 111,000 megawatts by 1990, and 119,000 megawatts by 1995.

TABLE 1

Nuclear Capacity to be Serviced by DOE
(thousands of megawatts)

Year	U.S.	Non-U.S.	Total
1985	79	43	122
1990	115	53	168
1995	119	58	177
2000	119	59	178

The demand for separative work corresponding to the above nuclear power growth projection was developed using the Enrichment Management Information System (EMIS) model. This model projects utility separative work demand on the DOE enrichment complex based on a probabilistic simulation of future reactor needs using operational availability factor distributions derived from historical data. The model further recognizes utility inventories and contractual limitations as well as flexibilities in scheduling, etc., available to DOE customers under their current enrichment contracts. The EMIS results were adjusted to reflect DOE sales losses to the secondary market and various scenarios of the impact of the new US contract on future demand.

Customer response to the US contract will be the major factor in determining enrichment services demand between now and the early 1990's. Figure 1 shows the band of annual separative work demands between now and 1989 for various scenarios of customer response to the new contract. The upper limit of the band reflects a totally positive customer response to the new contract (i.e., 100 percent of the current sales base converts to the US contract and takes 100 percent of their requirements from DOE), and the lower limit of the band reflects poor response to the contract (i.e., 50 percent conversion, 70 percent take from DOE). As can be seen, the band is quite broad. Market response to the new contract will be critical in determining funding that will be available for investments in new capacity, research and development, etc. As of early May, customer response has been quite good with about 70 percent of the current sales base already having indicated their intent to convert. Thus, we conclude that an assumption of 75 percent conversion - 70 percent take would be conservative for use in planning.

For the demand scenario, this conservative best estimate of 75 percent conversion - 70 percent take was used. All customers that converted their contracts were assumed to take the minimum 70 percent of their needs directly from DOE until the world surplus of enriched uranium in the marketplace was exhausted. Additional conservatism was introduced by asssuming that all surplus material available in the world was fungible and available to DOE customers at attractive prices. Utilizing these assumptions, about 45 million separative work units (SWU) of DOE sales were assumed to be lost to the secondary market through 1990.

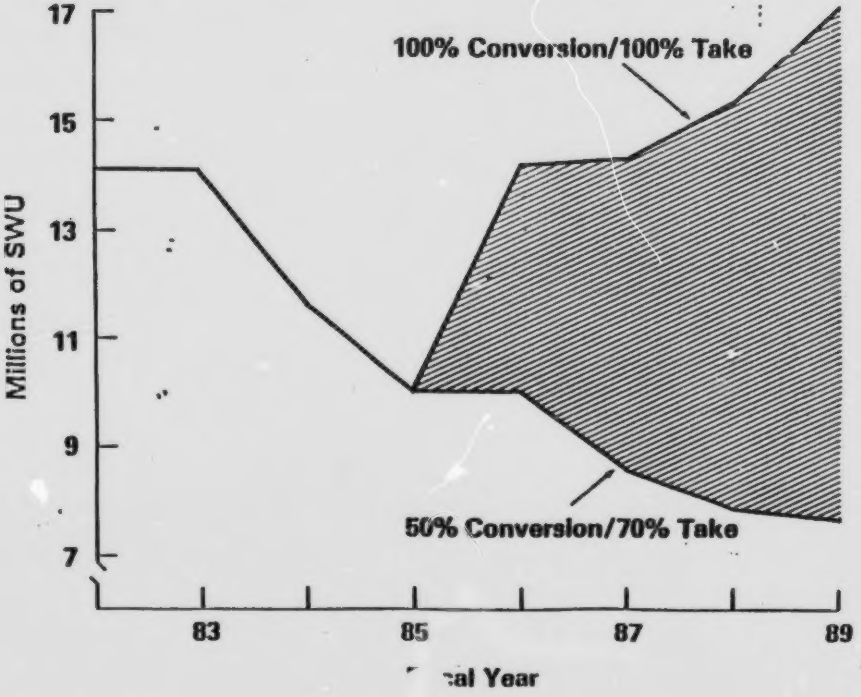
Thus, we believe that the civilian demand used in the working scenario is conservative for the next 10 years. Whereas, there is some downside potential for further reactor delays, cancellations, etc., this downside risk is compensated for by the conservatism of the assumptions regarding US contract conversions and the methodology used to adjust for use of excess inventories.

2. Government Enriched Uranium Requirements

Enrichment planning must also make provision for Government needs; that is, material needed by the Naval Reactor Program, the defense related Production Reactor Program, the Weapons Program, and other Government programs. The Government requirements used in the working scenario were derived based on two alternative cases provided by the Director, Office of Nuclear Materials Production in Defense Programs. Again, for conservatism, the case resulting in the lowest demand on the enrichment complex was used for the purpose of developing the demand scenario. The principle of cost recovery was utilized in estimating revenues from Government sales.

Fi

Range of Annual Civilian Demand



3. DOE Separative Work Inventory Requirements

It is DOE policy to maintain a minimum year end working inventory equal to 120 days of the following year's civilian separative work demand. The minimum working inventory provides for two basic needs of the enrichment operation:

1. The time required to physically handle the product in preparing and delivering enriched uranium to the customers and the "in process" material necessary to perform these transfer operations.
2. The flexibility to assure that the customer's delivery dates can be met even during peak periods during the year where demand will exceed production.

B. Enrichment Supply

Future enrichment demands on DOE can be supplied through a variety of supply options including drawdown of existing DOE enriched uranium stockpiles, production from the existing gaseous diffusion complex, production from new, more cost efficient enrichment technologies, and use of existing DOE natural uranium stockpiles to overfeed the enrichment plants.

1. Drawdown of Enriched Inventory

DOE currently has almost 20 million SWU's in its enriched uranium inventory. DOE's long-term minimum inventory requirement will be on the order of 7-8 million SWU's. Therefore, about 12-13 million SWU's of existing inventory will be available to offset future separative work production requirements.

2. Gaseous Diffusion Capacity

The maximum production capability of the three diffusion plants is dictated by the power contracts with the three electrical suppliers to the diffusion complex. The DOE contractors have reevaluated the minimum power level at which the combined three-plant enrichment complex can be maintained and have determined that, if necessary, the plants can be operated safely at a combined plant power level of 2,170 megawatts corresponding to an annual production level of 8 million SWU's.

3. New Enrichment Capacity

DOE is currently building a Gas Centrifuge Enrichment Plant (GCEP) adjacent to the Portsmouth GDP. Process Buildings 1 and 2 are now under construction and current technology (Set III) gas centrifuges are being procured for half of Building 1. Civil construction of these two buildings is near completion and centrifuges are now being installed in Process Building 1. With Set III centrifuges, each building would generate 1.1 million SWU per year of additional capacity. Initial production of 0.4 million SWU from Process Building 1 is scheduled for FY 1986.

DOE also has two advanced enrichment technologies under development, the Advanced Gas Centrifuge (AGC) and the Atomic Vapor Laser Isotope Separation (AVLIS) processes.

The AGC process has the potential for developing centrifuges with three times the separative work capacity of the Set III machines. These centrifuges could be incorporated into GCEP to substantially improve its economics. Thus, there are a number of capacity and schedular options available for the GCEP facility. As noted above, the first two process buildings of GCEP are now under roof and centrifuges for half of Building 1 are being produced and installed. If required, additional buildings, up to eight in total, can be added at the GCEP plant site. Depending on the number of buildings constructed and the capacity of centrifuges installed, the production capacity of GCEP can range from 2.2 million SWU per year (2 buildings-Set III) to 26.4 million SWU per year (8 buildings, AGC Set V). Depending on the GCEP construction schedule, the success of AGC, and development and funding availability, full production of 26.4 million SWU could occur in the early to mid-1990's.

AVLIS facilities can also be constructed in a modular fashion, and facility size can range from 1.0 million SWU per year to 14.2 million SWU per year capacity. A production scale AVLIS facility could be available for production in the early 1990's, depending on funding availability, the pace of technology development and plant construction.

Given the technical, economic, and market data expected to be in hand in FY 1985 and the large capital expenditures needed to continue development of two advanced technologies, a decision will be made in FY 1985 to select either AGC or AVLIS as the primary option for continued development and potential deployment. As discussed above, either technology appears to have the potential for introduction at scale within the next 10 years.

4. Tails Assay

The operating tails assay of the enrichment complex determines the relative amounts of natural uranium and separative work used to produce a given amount of enriched uranium. The transaction tails assay determines the amount of natural uranium the customer must deliver for a given product requirement. Taken together, the specification of these assays is a primary means of both regulating production and managing DOE natural uranium stockpiles.

DOE currently has a natural uranium inventory in excess of 40 million kilograms of uranium. A portion of this inventory can be used to operate the enrichment complex at a higher tails assay, if such operation is required. Higher tails assay operation permits the production of a given quantity of enriched uranium with a lower separative work requirement. This is quite useful at times by permitting lower power usage thus reducing the need for cash outlays.

The US contract provides a Variable Tails Assay Option (VTAO). VTAO allows customers to select their particular transaction tails assays within a specific range beginning in FY 1987. The extent VTAO is used will affect both SWU sales and feed deliveries. For example, selection of a high VTAO tails assay (say 0.30 percent Uranium 235) results in about a 20 percent reduction in SWU sales from the reference 0.2 percent Uranium 235 transaction tails assay level and a corresponding increase of about 20 percent in natural uranium deliveries. Based on extrapolation of the current experience with the Adjustable Fixed Commitment contracts, we are assuming that the average VTAO tails assay will be about 0.235 percent Uranium 235 (this would result in reduced SWU sales of 6 percent and increased natural uranium requirements of 8 percent).

III. PRODUCTION SCENARIOS

A. Description

Two alternative production scenarios were developed to meet the demand level described above. Scenario A was developed on the assumption that AGC technology would be selected for deployment by the Department. Scenario B assumes that the AVLIS technology will be chosen.

The key characteristics of the scenarios are described below.

1. Enriched Inventory Drawdown

   Under both scenarios, the DOE separative work inventory is used to partially meet requirements until about 1988 at which time the 120-day minimum inventory level is reached.

2. GDP Operations

   Under both scenarios, the GDP complex would be operated at lower power levels throughout the period. Under Scenario A, GDP production is at a level of 8 million SWU per year in the FY 1986-1988 time period. GDP production begins to increase in 1989 and gradually reaches the 16.5 million SWU production level by FY 1991. GDP power usage will be considerably below contract levels through 1991; therefore, DOE would pay capacity charges to its power suppliers amounting to over $2 billion in FY 1985 dollars.

   Under Scenario B, GDP production is slightly higher in the near term than in Scenario A. Additional GDP production in Scenario B is needed to offset the early GCEP production in Scenario A. GDP production decreases to 8.4 million SWU in FY 1986, increases slightly to 8.5 million SWU in FY's 1987-1988, and increases sharply until FY 1992 at which time a GDP production level of 24.5 million SWU is achieved. GDP power usage will be below contract levels through 1991 although to a lesser extent than in Scenario A. DOE would pay capacity charges to its power supplier in this scenario amounting to about $1.9 billion in FY 1985 dollars.

3. New Enrichment Plant Operations

   In Scenario A, a four process building schedule was assumed. This GCEP schedule results in the completion of Building 1 by 1989 and Building 4 by 1994. AGC technology is assumed to be available in 1989 for installation in the remainder of Process Building 1 and all of Process Building 2. BY 1993, sufficient GCEP capacity is available such that some GDP production can be curtailed.

   Scenario B, an AVLIS plant schedule consistent with constrained program research and development expenditures during FY 1985 and FY 1986 was assumed. This schedule would result in 1 million SWU per year capacity on line in 1993 with full capacity of 14.2 million SWU per year achieved in 1997.

4. Tails Assays

Under both scenarios, the enrichment complex would be operated at high (0.32 to 0.35 percent Uranium 235) tails assays in the period FY 1985-1989. Existing DOE natural uranium inventories would be used to reduce the need to purchase power. The higher assay tails material would be held in inventory for further stripping at a later date if it is economical to do so.

The standard contractual base transaction tails assay is assumed to be at the current 0.20 percent Uranium 235 level throughout. However, since the new US contract has a VTAO which permits customers to select their particular transaction tails assays within a specified range, the effective transaction tails assay is likely to be higher than 0.20 percent. Based on an extrapolation of the current Adjustable Fixed Commitment Contract (AFC) VTAO experience, we have assumed that customers will elect to transact at an average tails assay of about 0.235 percent beginning in FY 1987. For FY's 1985 and FY 1986, the actual VTAO tails assay chosen by the AFC customers has been used.

The key operating parameters of the interim working scenarios are summarized on Tables 2 and 3.

B. Discussion

Based on information available at this time, both scenarios appear to be technically achievable. Also, in both scenarios demand can be met with considerable flexibility to respond to upward changes in demand. Despite the conservatism built into the demand estimate, both scenarios result in estimated prices that are below the ceiling price contained in the US contract. If a cash shortfall were to be projected for any year, it could be remedied by adjusting program outlays. Furthermore, DOE currently has underway a number of management initatives to reduce the assumed outlays in Scenarios A and B including continued negotiation with the power suppliers for reduced power costs, additional cost management measures in all program elements, possible private sector participation in new enrichment capacity, off budget funding mechanisms, and other initiatives.

TABLE 2

Interim Working Scenario "A" Summary

FY	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Millions of SWU[a]										
Beginning Inventory	19.7	15.1	14.9	12.5	9.1	6.7	8.6	8.4	7.0	7.5
Production										
Gaseous Diffusion (GDP)	11.1	10.6	8.0	8.0	8.0	11.7	15.0	16.5	16.5	13.1
Gas Centrifuge (GCEP)	.0	.0	.4	.5	.5	1.7	3.8	5.9	8.0	10.1
TOTAL	11.1	10.6	8.4	8.5	8.5	13.4	18.8	22.4	24.5	23.2
Requirements										
Civilian	14.1	12.5	11.6	10.1	9.2	9.6	14.9	20.6	20.9	20.9
Government	1.6	1.6	2.2	4.7	4.4	5.9	5.7	5.2	5.2	4.2
TOTAL	15.7	14.1	13.8	14.8	13.6	15.5	20.6	25.8	26.1	25.1
Tails Assay Adjustment[b]	0	3.3	3.0	2.9	2.7	4.0	1.6	2.0	2.1	2.0
Ending Inventory	15.1	14.9	12.5	9.1	6.7	8.6	8.4	7.0	7.5	7.6
Millions of Kg of Uranium										
DOE Excess Inventory	41.2	36.3	32.5	29.2	23.8	12.2	7.1	3.7	.0	.0
U_3O_8 (mils)	107.7	94.9	84.9	76.3	62.2	31.9	18.6	9.7	0	
Sales (mils)		12.8	10.0	8.6	14.1	30.3	13.3	8.9	9.7	0
Megawatts										
Operating Power	2,914	2,790	2,170	2,170	2,200	3,120	4,100	4,490	4,520	3,710
Tails Assay % U-235										
Operating	.200	.320	.350	.350	.350	.330	.235	.235	.235	.235
Transaction	.200	.200	.200	.200	.200	.200	.200	.200	.200	.200

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a/ SWU requirements and inventories are evaluated at the transaction tails assay.

b/ Adjustment needed because higher tails assay operation results in larger quantities of enriched uranium being produced than if operations would have been at the reference transaction tails assay level.

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TAB.

Interim Working Scenario "B" Summary

FY	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Millions of SWU[a/]										
Beginning Inventory	19.7	15.1	14.9	12.5	9.1	6.7	8.6	8.4	7.0	7.5
Production										
Gaseous Diffusion (GDP)	11.1	10.6	8.4	8.5	8.5	13.4	18.8	22.4	24.5	22.2
AVLIS	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.0
TOTAL	11.1	10.6	8.4	8.5	8.5	13.4	18.8	22.4	24.5	23.2
Requirements										
Civilian	14.1	12.5	11.6	10.1	9.2	9.6	14.9	20.6	20.9	20.9
Government	1.6	1.6	2.2	4.7	4.4	5.9	5.7	5.2	5.2	4.2
TOTAL	15.7	14.1	13.8	14.8	13.6	15.5	20.6	25.8	26.1	25.1
Tails Assay Adjustment[b/]	0	3.3	3.0	2.9	2.7	4.0	1.6	2.0	2.1	2.0
Ending Inventory	15.1	14.9	12.5	9.1	6.7	8.6	8.4	7.0	7.5	7.6
Millions of Kg of Uranium										
DOE Excess Inventory	41.2	36.3	32.5	29.2	23.8	12.2	7.1	3.7	.0	.0
Megawatts										
Operating Power	2,914	2,790	2,275	2,300	2,300	3,600	5,110	6,190	6,860	6,120
Tails Assay % U-235										
Operating	.200	.320	.350	.350	.350	.330	.235	.235	.235	.235
Transaction	.200	.200	.200	.200	.200	.200	.200	.200	.200	.200

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a/ SWU requirements and inventories are evaluated at the transaction tails assay.

b/ Adjustment needed because higher tails assay operation results in larger quantities of enriched uranium being produced than if operations would have been at the reference transaction tails assay level.

July 16, 1985

STATEMENT OF FRANK E. McGINLEY
CONSULTING METALLURGICAL ENGINEER
GRAND JUNCTION, COLORADO

My name is Frank E. McGinley. I am a former Assistant Manager of the AEC/DOE Grand Junction Office and am currently a consulting metallurgical engineer. [1]

I appreciate the opportunity to appear before this Joint Congressional Hearing regarding H.R. 2236 and S. 1004. The focus of my testimony will be on the proposed legislation insofar as it relates to so-called "commingled" or AEC-related uranium mill tailings. With your permission I would like to read my statement.

I. Overview of My Involvement

My experience with uranium mill tailings dates back to the early 1950's, when I first went to work for the Atomic Energy Commission (AEC). At that time, and for several more years, uranium mill tailings were considered no more hazardous than tailings from other mining and milling operations. Put another way, the fact that the tailings were radioactive was of no great concern. Instead, in the early days of the uranium procurement program, emphasis was on obtaining as much domestic uranium as possible for defense needs. I do not plan to trace the history of the early uranium procurement program since it is available elsewhere, but I would like to mention that through the concerted efforts of many hardworking prospectors

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[1] A biographical sketch is attached as Exhibit A.

BEST COPY AVAILABLE

and numerous mining companies, it was immensely successful. So much so that by late 1957 the AEC announced, "it no longer is in the interest of the Government to expand production of uranium concentrates." The AEC procurement program originally was scheduled to terminate by the end of 1966, but when the private market for peaceful uses of atomic energy was not sufficient to sustain a viable domestic uranium industry, the AEC entered into its "stretch-out" program for purchases through 1970. Government procurement of uranium ended December 31, 1970.[2]

During the Government's uranium procurement program (1943-1970), there was a total of 33 uranium milling locations and 9 other sites where upgraders were located. At each of these sites tailings or other radioactive residues remained at the termination of the Government's uranium procurement program. Additionally, uranium mill tailings were released by some operators for construction related uses, such as land fill, in some communities. The AEC first began to extensively regulate radioactive uranium mill waste discharges and exposure of mill workers with the promulgation of the general standards in 10 CFR 20, "Standards for Protection Against Radiation," in January 1957. This set of regulations, however, did not

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2/ For a more complete description of the uranium procurement program, please see Report GJBX-220(82) "Summary History of Domestic Uranium Procurement Under U.S. Atomic Energy Commission Contracts-Final Report" by Holger Albrethsen, Jr. and Frank E. McGinley, October 1982, a copy of which is appended as Exhibit B.

require stabilization and so forth at uranium mills. Concurrently the Public Health Service surveyed various mills and published a "Waste Guide for the Uranium Milling Industry" in 1962. However, release of solid tailings by some operators did not cease until 1966 when it was discovered that the residual radium in tailings could give rise to elevated radon and radon decay products (or daughters) within buildings contructed on or adjacent to tailings fill material. The Subcommittee on Raw Materials of the Joint Committee on Atomic Energy conducted hearings on the "Use of Uranium Mill Tailings for Construction Purposes" here in Washington on October 28 & 19, 1971. Since I helped prepare the AEC testimony, I had the opportunity to be present at those hearings. Following those hearings, on June 16, 1972, P.L. 92-314 was passed which authorized the first remedial action program related to uranium mill tailings. The program provides for remedial action for properties -- as opposed to mill sites themselves -- in the vicinity of Grand Junction, Colorado. I helped establish this cooperative program with the State of Colorado and had supervisory responsibility for it until I retired in 1980.

It also was my responsibility to supervise the preparation of the reports on the status of the inactive uranium mill sites in cooperation with EPA and state officials. Those reports, plus follow-up studies by an engineering firm and the Oak Ridge National Laboratory, were followed by passage in November 1978 of P.L. 95-604, the "Uranium Mill Tailings Radiation Control Act." Title I of that Act provides for the cleanup and stabilization of tailings at 25 currently inactive uranium ore processing sites, and at vicinity properties contaminated with material derived from the sites. I helped establish the implementation of this program during the 1978-1980 period.

In 1981, I was hired as a consultant to assist the DOE and its Grand Junction Office contractor (Bendix Field Engineering Corporation) in the preparation of the "Commingled Uranium Tailings Study." I was responsible for the preparation of several of the thirteen individual site reports and for the discussion of problems regarding vicinity properties. A copy of both volumes of this report is attached as Exhibit C to my testimony.

II. AEC Contract Policies

I should like now to address specifically my recollection of AEC policy and contractual provisions for purchasing uranium ore and concentrates during the 1947-1970 period. As Dr. Larson noted in his testimony during the 1971 JCAE Hearings,

> "The discharge of radioactive mill effluents to the environment and the accumulation of radioactive tailings at mill sites are considered by AEC to be an integral part of the milling operations. Such discharge and accumulation are regulated by the Commission during the milling operations regardless of the uranium and thorium content of the tailings. On the other hand, the transfer of these tailings would not be an integral part of the milling operations and the AEC regulatory control would depend on the uranium and thorium content of the tailings." (page 5)

In short, after the tailings were removed from a mill site, or the mill license was terminated, the AEC by and large took the position that it lacked regulatory control.

Contracts were negotiated pursuant to the Atomic Energy Acts of 1947 and 1954, which authorized the AEC to establish guaranteed prices for source materials (uranium) delivered to it within a specified time. The contracts were initially entered into for period of 5 years or more, so the milling company could amortize (and thus recover) plant costs during the contract term.

Prior to negotiating a contract with a milling company, the AEC required submission of a detailed proposal showing that the company could meet AEC requirements for an adequate ore supply, technical capability, and financial responsibility. If these requirements were met the AEC and the company negotiated a contract for the construction and operation of a processing plant or mill. The price per pound of U_3O_8 in concentrate was arrived at through negotiation, with the AEC taking into account ore cost (including haulage), estimated milling cost (including plant amortization), metallurgical losses and profit. By this I mean that the Commission paid a price which was intended to reimburse for costs and, for that matter, to provide a reasonable profit, so long as the operator was reasonably efficient.

Initially and prior to May 8, 1958, the contracts required that the entire production of the mill be delivered to the AEC, limited to a maximum annual quantities. This general pattern of negotiation and contracting practice prevailed through March 31, 1962. A new program for AEC purchases subsequent to that date until December 31, 1966, established a flat price of $8 per pound U_3O_8 in concentrate. Finally, the last major change in procurement policy announced November 17, 1962, established a new program for the period January 1, 1967 through December 31, 1970. This was the "stretch-out" program which was to effect a better balance between AEC receipts and requirements and help provide for a continuing industry to supply the anticipated commercial market.[3] For those operators that agreed to defer U_3O_8 deliveries from the 1963-1966 period into 1967 and 1968, the AEC would purchase additional pounds U_3O_8 equal to the amount deferred. The price paid for deferred U_3O_8 in 1967 and 1968 was $8 per pound and the price paid in 1969 and 1970 for U_3O_8 produced from company controlled properties was based on a cost formula for the 1963-1968 period, subject to a maximum of $6.70 per pound U_3O_8. The price paid for concentrates produced from ores purchased from independent producers was \$6.70 per pound of contained U_3O_8. Eleven companies participated in the "stretch-out" program and during the period January 1, 1963 through December 31, 1970, those companies were free to produce concentrate in excess of that the AEC was obliged to purchase, and to sell such excess to any purchaser licensed to receive it.

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[3] As noted in the "Commingled Uranium Tailings Study" report, the main objective of the AEC raw materials program was the acquisition of uranium concentrate coupled, particularly in the later stages of the program, with the objective of maintaining a domestic uranium-producing industry capable of supplying raw materials required for peaceful uses of atomic energy, primarily nuclear power production.

This summary of the AEC's concentrate program reveals that negotiated prices were used from 1947 through March 31, 1962. A flat price of \$8 per pound U_3O_8 in concentrate was paid for production from April 1, 1962 to December 31, 1968. For the last two calendar years 1969 and 1970 a formula price was used based on 85 percent of allowable unit costs experienced at the mill during the 1963-1968 period, attributable to uranium, plus \$1.60 per pound U_3O_8 in concentrate.

In negotiating costs for arriving at a negotiated price to be paid for U_3O_8 in concentrate produced by a mill, the practice was to recognize those capital and operating costs necessary to discharge and impound the tailings (both liquid and solids). The capital costs included such items as pumps, pipe lines and earthen dams or dikes, while operating costs included labor, supplies and utilities. In some instances, especially in latter years, mill operators neutralized acidic effluents or treated them chemically to reduce the soluble radium content. In those instances, those added labor and chemical costs were recognized in arriving at the AEC purchase price.

III. Non-Recognition of Radon Hazard from Mill Tailings and Failure to Include Stabilization Costs

There was not to my recollection any provision in the AEC contracts that specifically recognized the costs of mill dismantling, site decontamination or tailings stabilization. Indeed, prior to 1960 there was little concern about the need to stabilize tailings, even from wind erosion. It was only after the AEC-owned mill at Monticello, Utah was shut down and tailings became subject to wind and water erosion that tailings pile grading and covering started to receive consideration. Even then AEC officials looked to the States as having regulatory responsibility over shut-down operations and encouraged States to adopt regulations to prevent the spread of tailings by wind and water erosion. Colorado assumed the leadership by proposing early in 1966 regulations calling for grading, covering with earth and in some cases planting the tailings area after a mill ceased operation. However, the seriousness of the problem of radon emanation from tailings was not recognized for several years after that, and the type of stabilization conducted by the AEC at Monticello, and as required by State regulations, would do little to diminish the radon emanation. The extensive measures currently envisioned for tailings reclamation -- which are largely associated with radon suppression -- were not conceived until well after the government contract period. Had the AEC recognized the potential radon hazard, or that extensive measures would be required to decommission mills and stabilize tailings, the Commission, in my opinion and based on my knowledge of its practice, would have recognized for purposes of its procurement contracts, and likely defrayed, all such reasonable costs associated with AEC-related tailings.

In summary, even though there may have been some tailings stabilization practices or regulations in existence prior to the termination of the AEC uranium procurement program, I do not recall provisions in the AEC contracts to recognize stabilization costs, [4] though there would have been provisions had it been realized such costs would be incurred.

IV. The Pending Bills

I will now turn briefly to H.R. 2234 and S. 1004. Both bills provide for the federal government to assume 30% of the costs for stabilizing existing tailings. Although I have not run the numbers, it is my understanding the 30% is roughly the proportion of AEC-related tailings to existing tailings at all active sites. The percentage at any given site would of course vary. Some may have none; others may have 50% or even 100%.

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[4] The sole exception might possibly have been a few mill operators that placed dirt and/or wood chip cover over completed inactive tailings areas to prevent dried tailings from becoming air-borne by high winds. Such operating costs incurred during the period 1963-1968 could have been recognized as allowable for determining the price paid for "stretch-out" pounds of U_3O_8 purcjased in 1969-1970. The point is that there was no recognition, to my recollection, of the extensive measures now being envisioned.

Precisely how Congress provides the reimbursement seems to me a legislative matter. However, given the facts as I understand them, the 30% contribution is not an unreasonable approach for an industry-wide bill. The only alternative would presumably be a site-by-site approach.

That completes my statement, I would be glad to try to answer any questions.

Mr. MARKEY. Our next witness is Thomas Neff, who is Director of the International Energy Studies Program from the Massachusetts Institute of Technology in Cambridge, MA.

He also happens to have the misfortune of living in my congressional district, but despite that, we think he still comes here with some credibility as a witness on this subject.

Dr. Neff.

STATEMENT OF THOMAS L. NEFF

Mr. NEFF. Thank you.

I think we last encountered when you walked up my driveway when you first ran.

I am pleased to be here today and to testify about an issue which I think is very important, though I think I am probably going to feel fairly lonely up here.

In listening to the discussion today, I am fairly well convinced that what we are dealing with here is a very complicated and difficult problem for just about anybody that has anything to do with the nuclear power industry.

I recognize the problems that foreign producers have had just as much as the U.S. producers of uranium, the U.S. enrichment activity.

For that matter, the French who built the Eurodif facility don't run it at full capacity. Basically, everybody is in a situation in which they overexpected, overproduced, overshot construction, and are now having to figure out how to clean up the mess.

And, of course, in doing that, there are tradeoffs about how you do it, and nobody wants to bear the entire burden.

What I am going to say today is, I think, helpful in thinking through what to do. Let me make a couple of observations about the domestic industry.

Then let me turn to the area which is really my big area of specialization, which is the international market and the international security issues associated with this.

And then, since those issues turn out to be very important, let me come back to the question of costs, domestically. What are we willing to pay for what?

I think the first important thing to observe about the domestic industry, as I said of everything else in the nuclear area, is that the U.S. domestic uranium industry overshot. It overproduced between 1973 and 1981, about 50 percent more uranium than was actually needed by utilities.

That material is still in the system. Some of it is being delivered still. Some of it, even though it is not produced this year, it is in inventory that is being delivered. It is sitting in utility inventories, in U.S. Government inventories. It is sitting in inventories all over the world.

That industry expanded so much that its marginal productivity was very low in the panic years of the mid-1970's.

These overhangs of inventories, I think, are the curse of having grown too fast, too big, and in fact, this problem is not really one of foreign origin, but one of domestic origin. Imports and exports to date of the United States have more or less balanced out.

In the future, it is a difficult question. Here, I think, the evidence is not quite so encouraging, not that it is discouraging yet.

What we are worried about with the foreign producers is fear of the future, not about a complaint of the past so much.

The point here is that now outside of the United States foreign utilities have contracts that run for almost all of their needs into the early 1990's. U.S. utilities are already needing to shop for uranium. This makes the U.S. market the only open market on Earth.

Rational production decisions by foreign producers or U.S. producers economically should be made on the basis of operating costs, not on sunk capital costs.

This doesn't cover previous investment. Foreign producers have a great advantage in having high price contracts left over and still operating that have covered their capital costs and most of their fixed operating costs, and so can sell only at the marginal variable cost of production.

This is not the biggest problem in the long run, beyond the early 1990's. The biggest problem is that resource horizons outside of the United States have altered drastically.

The United States reserves look terribly poor by comparison with what is being found in Canada and Australia. These deposits are 100 times richer in grade, in some cases, and 100 times larger in size in others, and some of them are tens of times bigger in both.

No matter how you do the calculations, if you do it on a completely independent business basis, these are going to be cheaper to produce than most U.S. reserves.

In effect, these discoveries have resulted in the economic depreciation of U.S. assets of inground uranium. Uranium companies are naturally upset that their assets have been depreciated, but I am not sure what Congress or anyone else can do to isolate us from that fact of nature, a rather cruel trick, I think, but one which would require essentially permanent efforts to isolate the U.S. market from the world market.

There is simply no way around it. It is a problem of structural adjustment to fundamentally changed circumstances.

Let me turn to the security issues. If the U.S. restricts imports of uranium, it will affect the international market. It will affect international policy concerns that are important to the United States and its allies.

These security considerations are, to my mind, the only good reason for acting on uranium imports, if it can be demonstrated that there are fundamental security issues.

There are really three areas that I think are important. One concerns how energy security might be directly reduced by the United States getting out of the international market. Second, what would it do to nuclear weapons proliferations efforts, and, third, what effect would it have on international trade and alliance relations?

Outside of the United States, if the United States closes its markets, the only market that is open right now, there will be a worldwide recession in the uranium industry. Our allies' utilities have a great fear of security of supply just like we do.

I might point out that virtually everybody else in the world, unlike the United States, depends entirely on international trade in uranium for their supplies. They have almost no domestic production, with the exception of France.

If the United States gets out, there is going to be a big depression, just as when it got out in 1966. Suppliers will shut down, and concentration will increase further. The Government agencies will take over. Market transparency will decline, and there will be increased danger of collusive behavior.

This isn't imaginary. It happened when the United States embargoed imports in the 1960's. For our allies, a repeat of these events could not but help reduce security of supply; retrenchment, less information, supplier-government involvement—all would undermine their security.

Second, efforts to restrain nuclear proliferation would be undermined. Lack of legitimate market opportunities will tempt producers to make clandestine sales to people that we wouldn't like them to sell to.

The biggest dangers are in Niger and South Africa. I might comment that Niger, a few years ago, sold 1,200 tons of natural uranium to Libya. It is not publicly known what happened to this material.

My view is that healthy international commercial markets with major U.S. participation may be one of the best safeguard policies available to the United States.

Mr. MARKEY. The gentleman's 5 minutes have expired.

Mr. NEFF. All right.

[Testimony resumes on p. 242.]

[The prepared statement of Dr. Neff follows:]

U.S. URANIUM IMPORT RESTRICTIONS: INTERNATIONAL SECURITY AND TRADE IMPLICATIONS

Testimony of Dr. Thomas L. Neff
Massachusetts Institute of Technology

to

Hearings on Viability of the Uranium Industry
and Proposed Alternatives

Subcommittee on Energy Conservation and Power
Committee on Energy and Commerce
U.S. House of Representatives

October 8, 1985

Congressman Markey, Members of the Subcommittee: I appreciate the opportunity to testify before you today regarding a policy issue that I believe to be of considerable importance to the United States. The United States has long recognized that nuclear trade issues must be considered in their international as well as national dimensions. This is also the case when we consider how to balance domestic and international interests in the question of proposed uranium import restrictions. The subcommittee is hearing today from a number of witnesses concerned with issues of employment, industry viability, nuclear power costs and other domestic issues. In my testimony, I will touch briefly on these matters, hoping to clarify the national context for decisions, but then turn to what I believe may be even more important international concerns.

THE U.S. URANIUM MARKET

There can be little doubt that the U.S. uranium industry has suffered major setbacks since prices, production, and employment peaked in the late 1970s. Domestic production is now one-third of that in 1980; real prices (corrected for inflation) for new sales are less than one-quarter those obtained in 1976--now comparable to those of the previous industry depression of the early 1970s; and employment in domestic mining and milling is only about one-fifth that of 1979. While these statistics appear to be cause for concern, it is important establish historical perspective. The uranium boom of the 1970s rode on the coincidence of extravagant expectations for nuclear growth, world-wide security of supply concerns, imposition of rigid government enrichment contracting policies, and other factors that led to a virtual panic of demand for uranium.

In fact, the U.S. industry over-expanded and over-produced: production between 1973 and 1981 was more than fifty percent greater than was actually needed for the nuclear power program, resulting in huge inventories that overhang the market today and depress prices. Prices, and profits, also rose dramatically in the the 1970s--more, I believe, than would have been justified in a balanced market--and it is difficult to say whether the prices of the boom should be taken as a point of comparison, or as one of compensation for the depressed prices of today. Employment also seems to have expanded disproportionately in the boom: productivity in mining and milling in 1973 was more than 5,000 pounds of uranium oxide per person-year; by 1979, the average figure was only 2000 pounds (suggesting extraordinarily low productivity for incremental workers); in 1984, productivity had revived to 4400 pounds per person-year. Again, it is difficult to say whether the uranium industry problem should be seen as one of contraction today, or premature expansion yesterday.

While I do not mean to minimize the human and economic dimensions of the problem, clear understanding of how we got to where we are seems important. The basic point here is that much of the U.S. uranium industry's historical problem--up to today--has had little to do with things beyond our borders. Indeed, the direction of cause and effect has historically been the opposite: the ups and downs of the international industry have depended critically on what the U.S. has done.

The future for the U.S. is, however, a different matter. Whatever one believes about how the U.S. industry got where it is today, future domestic and international markets and policy regimes are fundamentally and unavoidably linked in ways that have profound implications for the issue before this committee. In exploring these implications, I will look first at the U.S. problem in the context of world uranium market developments and then examine the central international policy linkages.

WORLD URANIUM MARKET ISSUES

The fundamental problems here stem from major differences and tensions between the U.S. and international uranium markets in terms of market structure, contracting, and resource bases. There is not time today to do justice to these topics, so I will focus on the essential features.[*]

In the short-run, over the next five to ten years, there is a striking difference between forward contracting horizons for U.S. and foreign producers. Outside the U.S., utilities have entered into long-term contracts with primary producers, with such contracts often the basis for financing of mine and mill development. These arrangements resulted from intense security of supply concerns of foreign utilities, especially following the 1973-4 oil crisis, and from basic requirements of transnational investment. As in the U.S., buyers in the 1970s committed to deliveries greatly in excess of needs. But, unlike the U.S., where long-term contract deliveries have already dropped well below annual utility needs, foreign utilities made much longer-term commitments and collectively will not need to make major new supply arrangements for some years yet.

The result is that the only near-term market opportunity is in the U.S. Moreover, just as in the U.S., foreign producers--Canada, Australia, Niger, Gabon, Namibia, and South Africa--overexpanded in the last decade and have excess production capacity, much of it already paid for. With capital costs sunk and fixed operating costs covered by existing contracts, foreign producers will profit on sales that do little more than cover incremental operating costs. These costs are often lower than costs for U.S. producers, a difference increased by higher quality reserves, lower labor costs, and a strong dollar.

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[*] A comprehensive analysis can be found in my recent book: The International Uranium Market, Ballinger/Harper & Row Publishing, September, 1984.

The Economic Depreciation of U.S. Reserves With some effort, it would be possible to see the next few years as a transient problem for the U.S. uranium industry, amenable to temporary solutions. There is, however, a much more fundamental long-range problem. For many years, it was commonly believed that uranium resource exploitation was an inexorable progression toward lower grade, deeper, and more costly sources of supply. This view--which was the basis for plans for plutonium recycle and breeder reactors, as well as U.S. uranium industry investment--has been proven correct for traditional uraniferous formations in the Western U.S. and the Gulf Costal Plain.

However, the view of uranium as a globally mature, depleting resource cannot be sustained: there has been a radical change in geologic horizons outside the U.S. with many rich new deposits being added to world reserve lists, and indications of many more. From this contemporary perspective, U.S. reserves look extraordinarily poor. U.S. "low-cost" reserves of about 360,000 MTU* occur in 650 separate properties with an average ore grade of only 0.10 percent uranium oxide; the twenty largest properties contain an average of 6,000 MTU at an average concentration of 0.09 percent. New discoveries, largely in Canada and Australia, are either far larger or much richer--or both. The Key Lake deposit in Saskatchewan, now being mined, contains at least 70,000 MTU at an average concentration of about 2.70 percent--ten times bigger and more than ten times richer than virtually all U.S. deposits. The Cigar Lake deposit is perhaps twice as big as Key Lake and has a uranium oxide concentration 100 times greater than in the U.S. Australia's new deposits are less spectacular in grade but extraordinarily large: in one deposit, Jabiluka contains 170,000 MTU (equal to about half of all U.S. low-cost reserves) with an average uranium concentration of about 0.4 percent (three times that of the average being mined in the U.S.). At Roxby Downs in South Australia there is at least 1,000,000 MTU which could be coproduced with copper, gold and other minerals at costs comparable to those in the U.S. for uranium alone.

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*MTU=metric tonne uranium (as primary metal); 1 MTU = 2600 lb. U308.

Undoubtedly, there is much more uranium in much richer deposits than was imagined even ten years ago; I suspect that we have only found the tip of the iceberg. Experience in the last decade has shown that this material may be explored for, discovered, and developed at much lower costs than are now common in the U.S.

These radical changes in resource perspectives have dramatically altered the place of existing U.S. reserves in the world supply curve, shifting their prospective utilization further out in time. At any reasonable discount rate, the value of much of the U.S. reserve base appears to have been depreciated to near zero present economic value by new discoveries, and by delays in nuclear power growth.

This economic depreciation of assets is obviously of great concern to the U.S. uranium industry. However, it is difficult to imagine legislative remedies that can compensate for what seems largely a cruel trick of nature. What is obvious is that efforts to isolate the U.S. industry and market from the rest of the world--to (artificially) restore the economic value of reserves in effect--would require a long-term and quite expensive effort. Given the apparent basic gulf between domestic and foreign reserves, there would need to be convincing evidence that the potential tide of imports could be held back for decades if substantial new investment in the U.S. were to be justified. This is not a short-term or merely transitional problem; it is a problem of structural adjustment to fundamentally changed circumstances. In evaluating national policy objectives, it seems important to recognize this explicitly.

Market Evolution At present, we know the location and character of virtually all of the reserves--developed and undeveloped--that would figure in market evolution over perhaps the next two decades. We also know installed production capacities, approximate production costs, contractual situations, ownership, and national policies (finding all this out is difficult, but it can be done). We do not need to make major assumptions about rates or costs of new discoveries, only about the conditions of availability of identified material.

If there are no restrictions on U.S. imports, one can demonstrate that there is slightly more than enough installed production capacity worldwide to meet all uncovered U.S. utility requirements between now and the early 1990s with imports. Beyond this, established capacity would be enough to meet about half of projected total annual U.S. needs until the end of the century. This calculation assumes that foreign utilities take delivery on existing contracts, add to inventories where there are surplus deliveries, and meet future needs by new purchases. Of course, it is likely that some existing capacity will not be used--for economic or political reasons--and that new (but probably already known) deposits will be developed. However, even with an open U.S. market, it seems quite unlikely that overall world capacity will expand significantly.

This physical feasibility is, of course, not a prediction (though the fears of the U.S. industry may make it seem so). What this picture suggests is that prices would remain relatively weak until the early 1990s and then start to firm as existing production capacity was saturated; this appears to occur when U.S. imports approach about half of annual domestic needs. Prices would firm sooner and more significantly if capacity were taken out of service--a prime candidate is Rossing's Namibia mine. As prices firmed, those existing and new U.S. mines able to compete with new foreign production centers would expand output. While it is unlikely--given the resource view above--that the U.S. would stop importing uranium, it also seems unlikely that domestic production would stop.

In this open trading picture, domestic and international prices would be roughly comparable but with variations reflecting contractual conditions, equity roles, government constraints, utility purchasing preferences, and other factors. It seems likely that a significant fraction of imports would flow through mining companies and other intermediaries--there are legal, regulatory and other reasons for utilities to buy from domestic firms against whom they have legal recourse or which offer risk spreading through a portfolio approach.

Market Disruptions There has been concern expressed that U.S. imports under a free trade system would result in significant security problems for the nation. As I will argue later, this is a much broader question than it first appears, involving questions ranging from long-term international market evolution to the proliferation of nuclear weapons. Here I will deal with the narrower question of possible disruptions of supply. The first observation is that nuclear fuel is not like oil or natural gas: disruptions of natural uranium shipments would take several years rather than several days or months to be felt--there is considerable material in the processing pipeline.

Second, inventories held by U.S. utilities, the U.S. government, foreign utilities, allied governments, non-disrupted producers, and agents are extremely high and, given over-contracting and over-production, likely to remain that way. Third, the international industry has demonstrated the capability to expand output rapidly: despite an immature industrial base, foreign output doubled in less than four years during the 1970s' demand explosion. The existence of well-delineated high-grade undeveloped reserves and a mature industrial base would make expansion even easier in the future. Finally, the U.S. has its own in-ground "strategic" reserves--the deposits that might go unused if some imports are cheaper. To the extent that there is a security question, it seems more one of transient financial character than one of physical dependency. It is worth remembering that, with the partial exception of France, all other nations with nuclear power programs have gone ahead without any significant domestic uranium resources at all, relying on diversification, stocks and other market strategies to ensure security.

Market Implications of U.S. Policy Impacts What are the market implications of a significant limitation on U.S. imports? This is not an entirely theoretical question--between 1966 and 1975 the U.S. did impose such a limit, through prohibition of enrichment (where the U.S. had a monopoly) of foreign feed for domestic use. A brief review of this history will be instructive. In 1959, the U.S. government announced that it was terminating foreign weapons-related procurement when existing agreements expired. The result was the virtual collapse of foreign production; Canadian production alone dropped from 24 million pounds in 1959 to 6 million in 1966.

In 1966, the U.S. implemented its commercial import prohibition. Perhaps not coincidentally--at least in foreign uranium industry eyes--this was also the year in which the first surge of commercial power reactors occurred, almost entirely in the U.S. The combination of continued A.E.C. purchases (until 1971) and isolation from foreign competition helped sustain the domestic uranium industry. Outside the U.S., a deep depression set in and prices fell to less than half the U.S. level. It was, I believe, out of this depression that the international uranium cartel was born, a desperate effort--led by Canada (which held the dominant market share)--to divide up what demand there was and manage competition. While many have argued that the cartel served to raise prices, it seems equally plausible to me that the initial objective was to react to continuing price erosion. Governments implicitly or explicitly took central roles in this effort, furthering the retreat from free markets.

The cartel was soon challenged to keep up with new events, the most consequential of which was again a change in U.S. policy, this time a decision to require domestic and foreign utilities to make long-term commitments to enrichment services before the order books were closed in 1974. Corollary increases in reactor orders and uranium feed requirements soon set off a panic surge in uranium demand and prices, aided by both consumer and producer nation actions taken in response to perceived security threats. In 1974, the U.S. government decided that our market could again be opened to foreign uranium supply as U.S. production and prices were increasing rapidly; the result was an extra (but transient) boost to world prices (which soon outstripped those in the U.S.). From the perspective of foreign producers and consumers--many of them our allies, it would be hard to escape the conviction that U.S. actions have consistently aggravated uranium market problems.

There is a remarkable parallelism in this history with the situation now presented us. International uranium production capacity now exceeds requirements; the U.S. is the only significant source of new near-term demand; and the U.S. government is proposing to restrict imports to protect its domestic industry. Private companies have begun to exit from production ventures in most producer nations, to be replaced by state enterprises or marketing boards, the latter increasing market concentration, politicizing supply arrangements, and reducing flexibilities and other healthy market conditions that would ensure smoother response to unexpected events. Some worry that openness to imports exposes us to sovereign risks. Given the compelling logic of our historical experience, is it not perhaps the case that isolationism carries its own potentially more serious risks? This question brings us to the larger security issues I have promised to discuss.

A BROADER VIEW OF SECURITY

The ultimate justification for government intervention in commercial activities rests on the demonstration of compelling national security interests. As we should have learned from repeated experience, in oil and nuclear markets and elsewhere, this is not a simple matter--either in the demonstration or in the execution. Actions taken in the name of national security have often compromised security in unexpected ways, or even--like Project Independence--had the opposite effect to that intended. The question of uranium import restrictions raises larger questions in three areas: security reducing effects on world nuclear fuel markets; nuclear weapons proliferation; and effects on international trade and alliance relations.

World Nuclear Fuel Security U.S. withdrawal from world markets would significantly aggravate the market trends referred to above: prices outside the U.S. would drop further while U.S. prices rose, international investment would decline, private companies would withdraw, governments and state enterprises would increase their roles, some suppliers would shut down, market concentration would go up and flexibility down, and information and market transparency would decline. These changes would affect both the U.S. and its allies. The U.S. would have reduced information about and influence on world nuclear fuel trade and our companies would have little incentive to invest abroad.

Our allies in Europe and Japan--depending almost entirely on the international market--historically have given great attention to security of supply. Superficially, one might argue that reduced prices and surplus capacity would improve their security. However, on balance I don't think this would be the case, or that they would see it that way. For the next five to ten years, most supplies are already under contract, at prices that are and would remain high compared to spot prices. The major preoccupation will thus be with reliability of supply. The destabilizing trends outlined above could not help but reduce perceived security of supply; in the longer-term there would, in addition, be increased concern about new international investment. Retrenchment, reduced opportunities for diversification, less information, supplier government involvement--all would undermine security.

Nonproliferation The effort to contain nuclear weapons proliferation might be undermined in two ways by unhealthy conditions in world uranium markets. The first is very simple: lack of legitimate market opportunities for existing and prospective surplus stocks and production will tempt some producers and other holders to make clandestine sales to those that have refused to accept nonproliferation restraints.

The greatest surpluses, and the greatest dangers, will be in Niger and South Africa. Niger depends on uranium sales for half of its national income and its president has said he would sell to the devil if necessary to maintain that income. In 1981, as conventional sales declined, Niger sold 1200 MTU to Libya, a country with no legitimate need for uranium. It is not hard to imagine similar future events. While much of recent U.S. policy has focused on commercial plutonium as a nonproliferation threat, the old-fashioned uranium routes to weapons are increasingly available, with additional complications from the spread of new enrichment technologies. Healthy international commercial markets with significant U.S. participation may be one of the best safeguards policies available to the U.S.

The second proliferation concern arises from the potential for revived interest in plutonium fuel cycles outside the U.S., especially among the developing and newly industrialized countries. If the future of uranium supply is perceived as insecure--or even uncertain--there will be greater justification for plutonium research and development programs. U.S. participation in international markets might well be seen as a sign of confidence, common interests, and a stabilizing influence. It is also worth noting that in the U.S. import restrictions that meant ever-increasing uranium prices would help revive interest in reprocessing and breeders.

Trade, Commerce, and Alliance Relations It is not necessary to note here the high level of concern in the U.S. and among its trading partners about this issue. Protectionist actions in the case of uranium would only add to discord in an alliance already strained by trade friction, and perhaps force tradeoffs of other American interests. There are, however, some specific problems with uranium. The first is that the primary worries of U.S. producers have to do not with our enemies but with our friends, with potential imports from Canada and, to a more limited extent, Australia. Both are among the U.S.'s closest allies, most important trading partners, and both have consistently been the most helpful nations in U.S. efforts to control nuclear proliferation.

In addition to the direct problems a U.S. embargo would cause these nations, the closing of the U.S. market and the consequent drop in world uranium prices would reduce future earnings from uranium sales to other consumers, increase demands for renegotiation of existing contracts, and threaten the viability of foreign producers. The economic loss they face is thus not just that associated with lost sales to the U.S. While this is a complex legal issue, it appears possible that a case could be made under the General Agreement on Tariffs and Trade that the U.S. compensate these nations for damages done to their industries and trade.

There is also a somewhat more subtle problem arising from the nature of the domestic political consensus in both Australia and Canada. Both nations are subject to recurrent internal conflicts over nuclear exports, conflicts in which the weighing of costs and benefits plays an important role. If U.S. actions result in lower prices and reduced benefits from exports, it is possible that future supply from these nations will be restricted by shifts in internal political balances. This would further undermine the long-run supply security of Japan, the EEC, and the newly industrializing nations, aggravating their problems--and our own--as discussed above.

ECONOMIC AND POLICY IMPLICATIONS

This broader view of U.S. security interests is reflected in some, but not all, of the existing and proposed legislative basis for action in regard to uranium imports. The 1964 amendments to the Atomic Energy Act regarding "viability"--while affecting the guise of national security--obviously reflected the historic view of U.S. nuclear hegemony as well as contemporary concerns about the U.S. uranium industry. From today's perspective, national security and viability both seem to have been narrowly defined--at least as the Act was implemented. I believe that it is difficult even to argue convincingly that actions taken under this authority in the 1960s and 1970s significantly enhanced U.S. security; a careful assessment might well indicate the opposite. It is even more difficult today to argue that unilateral prohibitions and isolation enhance security.

The 1983 effort to clarify conditions for viability (Public Law 97-415) appears to reflect awareness of modern complexities, without actually resolving the tradeoff problems. Some of the criteria listed seem oriented toward largely domestic issues of industry activity and profitability; others invoke broader national security concerns. Under the 37.5 percent import trigger rule, a call is made for investigation under Section 232 of the Trade Expansion Act of 1962. While the Section 232 assessment requires consideration of domestic industry health, it also demands that the total impact of the proposed action or inaction be taken into account, including "foreign policy considerations, international trade policy, and procurement agreements." It further specifies that the purpose of the investigation is to "safeguard the security of the nation, not the economic welfare of a company or industry, except as that welfare may affect the national security."

Given multiple dimensions to U.S. and international security in nuclear fuels trade, it seems essential that the net domestic benefits be worth the risks we run internationally. It is surprising that there has been virtually no economic analysis of such questions, though the economic costs of import restrictions are potentially large.

A simple calculation can make this clear. During the next ten years, the U.S. nuclear power program will require about 400 million pounds of natural uranium. If import restrictions result in an average price in the U.S. that is ten dollars a pound higher than would be the case under open market conditions, the total cost to utilities and electricity ratepayers would be four billion dollars over the decade. Under existing proposals, I suspect that this is likely to be a lower bound on the cost; it might need to be higher to provide significant encouragement to the domestic industry.

This calculation is meant to be simple and illustrative--more detailed analysis could be done--but it is not obviously misleading. With another assumption, based on historical data for the U.S. industry, we can make a rough estimate of the cost of jobs saved by import restrictions. In 1984, a total of 3,400 person-years in mining and milling was required to produce 15 million pounds of uranium; in 1979, 18,000 person-years was required to produce 37.4 million pounds. Clearly, marginal increases in output require significantly more labor and create more jobs (but the high labor intensity at high output levels also helps explain why imports are cheaper). For purposes of illustration, let us assume that half of U.S. needs (about 20 million pounds a year) could be meant by a mining and milling labor force of 6,000, but that 10,000 would be required to produce three-quarters of U.S. needs (about 30 million pounds a year). Import restrictions thus might recreate on the order of 4,000 jobs over the decade. While one might change any of these numbers a little, it is still clear that the cost of each job saved or created by restrictions may be as high as a million dollars (4 billion dollars for 4,000 jobs).

I believe it is incumbent on us to consider these broader economic and security issues in contemplating further legislative action on uranium imports. And I believe that these issues are sufficiently important, and interwoven with national and international policy objectives, as to warrent explicit attention by Congress, rather than being delegated to Executive agencies with narrower missions and capabilities.

Mr. **Markey**. Again, we would ask your indulgence, but just in the interest of having each panelist have a chance to make an opening statement and for us to get out of here at a reasonable hour, I think it is wise to constrain the opening statement to 5 minutes' duration.

The next witness is Mr. John Selby, the chief executive officer of Consumers Power Co. of the State of Michigan.

Mr. Selby, please.

STATEMENT OF JOHN D. SELBY

Mr. **Selby**. Thank you, Mr. Chairman.

I am chief executive officer of Consumers Power Co., an investor-owned utility serving the 1.3 million electricity customers and 1.1 million natural gas customers in Michigan's lower peninsula.

I personally believe that a secure domestic energy supply is vital to our national interests. Surely our memories cannot be so short that this point is debatable.

An assured secure economic supply of raw uranium is a key component of energy security for this nation. We currently have 95 nuclear powerplants licensed in this country with an additional 32 scheduled to be licensed before the turn of the century.

The state of the domestic uranium industry, mining, and milling, have been discussed by a number of people before me, so I will not repeat and discuss the status of that industry. It is in terrible shape.

In my opinion, the problems facing the domestic uranium industry parallel problems facing the production and use of other valuable energy-related commodities. Viewed in a broader context, uranium is but one of several commodities subject to unfair trade practices by our country's trading partners.

The real answer to our country's energy problem lies in recognizing the policies that have resulted in the erosion of our domestic energy base, because correcting these policies will be far more effective than engaging in any kind of retaliatory trade practices that may seem politically popular but would be economically disastrous.

We need to regenerate our domestic energy industries, not only uranium, but natural gas, oil, and electricity. For example, we should not dismiss the likelihood that our customers' growing need for electricity may be better met by the construction of new powerplants where a need can be justified, than the building of transmission lines to bring in more electricity from Canada. This, incidentally, would contribute greatly to the revival of our domestic uranium industry.

Having said this, I would like to provide the subcommittee with certain facts about my company's experience in the purchase of supplies from one of our country's largest trading partners, Canada.

But before I summarize this experience with Canadian energy contracts, I want to emphasize that all of Canada acts in a rational manner to insure that the benefit of her resource developments stay in Canada, that the capital and the jobs resulting from these resources remain in Canada. It is in no way surprising, therefore, that Canada often acts in a way detrimental to United States interests.

Now, I have three examples, but in the interest of time, I will only discuss one of them at this point. The others are in my testimony.

We had a contract with the Imperial Oil Corp. involving the purchase of Canadian crude oil. Our contract was signed in March 1971 for 55,000 barrels per month, increasing to 900,000 barrels per month in 1974 and 1975, at a specified price, which at that time was approximately $3 per barrel.

In late 1973, when the oil cartel resulted in access restrictions and skyrocketing world oil prices, the Canadian Government, through its National Energy Board, imposed an arbitrary tax, originally 40 cents a barrel, escalating rapidly to over $4 a barrel, finally reaching $8 a barrel.

This tax was justified by the Canadian Government on the basis that it did not want its oil prices to be below international oil prices. In other words, it became an unofficial member of the cartel.

In September 1975, the Canadian National Energy Board released its report, Canadian Oil Supply Requirements, announcing the elimination by 1981 of crude oil exports. This policy required the company to renegotiate its contracts to purchase residual oil rather than crude oil specified in the contracts.

The National Energy Board explained that this policy was intended to allow export only of fully refined products to stem the potential exporting of jobs, capital and tax income. I wish to emphasize the fact that each of the actions was taken by the Canadian Government and not by the individual corporation with whom we were dealing.

Based on this experience, I would offer the following advice:

One, remember that Canada is a foreign government with a much more centralized planning function than our own. Its policies and actions, both official and corporate, are coordinated to a degree difficult for Americans to understand.

The Canadian Government has a very clear policy of insuring that the benefits of development go to its citizens and takes coordinated action to ensure that this occurs, in spite of preexisting contractual arrangements.

The government takes an active role in every transaction affecting the development of its national and energy resources. For this reason, it is unwise to consider a long-term contract regardless of how artfully drawn, to be other than a year-to-year contract susceptible at any time to the intervention of government review and action.

Second, Canada is vulnerable to the same economic pressure affecting the rest of the world, such as inflation, capital shortages and unemployment. It has rich and abundant natural energy resources which are her most marketable commodities. These resources receive commensurately more governmental attention than other exports since their effect on the Canadian economy is so great.

Canada has become expert in the world of financial maximization of its resources. It limits, where possible, the export of raw material in preference to the export of value-added exports, such as fully refined oil products and upgraded uranium.

The reasons are simple: this retains the economic, tax and employment benefits in Canada for Canadian citizens. The fact that it has such a severely damaging effect on United States facilities, is, in all likelihood, to the Canadian Government, an unintentional and unfortunate side effect which cannot be helped.

This does not mean the effects of the policy are any less devastating in the United States. It is simply woeful that the United States does not have a similar policy for protecting its resources and employment from foreign government policies of market intervention.

Third, traditional notions of contracting and fair play are in the minds of the beholder. Canadian economic structure is a different animal from the one which exists in the United States. We have no crown corporations.

In Canada, it is not unusual for government-owned corporations to coexist with privately owned corporations since the markets are allocated by governmental entities. It is likewise highly unusual for any U.S. corporation to submit its export contracts to a governmental review board for approval.

Mr. HALL. Mr. Selby, if you can wind down now.

Mr. SELBY. Very good. We must begin to look at trade issues in a different light. Is it fair to call a market free when it is dominated by government-controlled corporations?

Are we really helping American citizens by discouraging development of our domestic resources and replacing them with foreign-subsidized imports?

Are we being honest with ourselves when we export our dollars to pay for these subsidized imports and call these transactions free trade?

These are important questions which congressional committees such as this one will have to resolve in order to form policies for the transition of world economy if the United States is to be able to retain its position of world leadership.

Thank you.

[The prepared statement of Mr. Selby follows:]

TESTIMONY OF
MR. JOHN D. SELBY
CHAIRMAN, PRESIDENT AND CHIEF EXECUTIVE OFFICER
CONSUMERS POWER COMPANY
JACKSON, MICHIGAN
BEFORE
THE ENERGY CONSERVATION AND POWER SUBCOMMITTEE
OCTOBER 8, 1985

Mr. Chairman and Members of the Subcommittee, my name is John D. Selby. I am Chairman, President and Chief Executive Officer of Consumers Power Company of Jackson, Michigan. Consumers is an investor-owned utility serving more than 1.3 million electricity customers and 1.1 million natural gas customers in Michigan's lower peninsula. I am pleased to have been invited here today to speak on the issue of the viability of the domestic uranium industry. Very simply, I am concerned that the uranium industry may be the first of our domestic energy sectors to fall prey to our failure to have a comprehensive energy and trade policy.

Consumers Power Company, and I personally, believe that a secure domestic energy supply is vital to our national interest. Surely, our memories cannot be so short that this point is debatable. A secure, economical supply of raw uranium is a key component of energy security for this nation. We currently have 95 nuclear power plants licensed in this country, with an additional 32 scheduled to be licensed before the turn of the century. I believe that it is important for this country to have a domestic uranium supply sufficient to support a large percentage of these reactors, plus our national defense activities.

From my knowledge of the uranium mining industry, I can tell you that we do not now have what I regard to be the minimum capability for energy security. Consumers Power Company was one of about 15 utilities to have its own uranium mining and processing facility. I can attest to the fact that uranium mining has undergone one of the most vicious "boom and bust" cycles that traditionally plague the mining industry. Our uranium subsidiary, Plateau Resources of Utah, has been shut down for more than a year. All but three of the 26 mills have ceased operation. Less than 10 mines in this country still employ more than five miners.

When these mines are not operating, large costs are incurred to maintain electric pumps that are needed to prevent the flooding of mine cavities. When mines are closed and the pumps turned off, mine ceilings and walls cave in, resulting in these resources being lost, perhaps irretrievably. In the case of Plateau, we presently are maintaining the site in accordance with NRC and other governmental regulations. However, we may in the near future have to decide whether to decommission the facility, which means we would have to dismantle the structure, something that would allow us to recapture a portion of our investment, but would dramatically increase the cost of new facilities if, for some reason, we decided to begin anew.

There are several reasons why the uranium industry is in its current condition. One is the long-term effect of the Department of Energy's enrichment program, which was recognized to have led to the creation of an enormous secondary market of enriched and natural uranium. This overproduction is being sold at distress prices by utilities because many of the reactors for which it was produced have long since been cancelled. This market overhang eventually will work itself off and demand and supply will again achieve equilibrium, as is occurring in the enriched uranium markets.

By far the most serious long-term threat to the domestic uranium industry is the loss of its market to unfairly traded foreign uranium. According to the Energy Information Administration, in 1984, imports constituted over 35% of the uranium used in this country. Approximately 60% of imported uranium originated in Canada and slightly over 30% originated in South Africa or Namibia. Faced with the fact that this country will not protect its markets, even in strategic materials, from what are, in effect, illegal foreign imports, it is not surprising that investment in domestic uranium supplies has come to a halt. The situation will not change until steps are taken to ensure that uranium is fairly priced at at least the cost of production.

I recognize that Americans are currently able to save money on the cost of many imported items due to the lower cost of those items compared to the cost of domestically-produced items, whether or not violations of international trade laws have occurred. I believe, however, that for certain items, especially those susceptible to cartelization and unfair trade practices, the maintenance of domestic capability is more in the national interest than the short-term benefit of a reduced price. I believe that most items necessary to a secure energy supply fall into the category of superceding the benefit of artificial and temporary low prices.

The concern of which I am speaking is, very bluntly, the destruction of domestic uranium production capability by the closing of our mines in the face of increasing product dependency, which, of course, leaves the exporter free to raise prices unimpeded by an effective alternative. This is the very reason why predatory pricing policies are illegal under domestic and international trade laws.

It is with a sense of deja vu that I speak these words. I thought these issues had been addressed and resolved when the country agreed on the goals of Project Independence. However, over the past 10 years since that program was adopted, the individual pieces of the plan have evaporated. It appears that the national consensus which had existed no longer exists. This country has become complacent about our energy security and our energy future now that oil prices are declining. I am quite concerned about this complacency, as dependence upon foreign oil, natural gas, coal, uranium and, now, electricity, creep up past the levels of the Seventies, and as energy efficiency and conservation improvements lose ground as the price of oil declines.

This complacency is most short-sighted, I believe, in the area of unfairly traded energy imports. I am pleased the Subcommittee is hearing from Mr. James Friedman because I believe the concerns he has raised in his book, The Silent Alliance, are quite real. These problems of exporting investment capital and jobs will only get worse if they remain unrecognized and uncorrected.

In my opinion, the problems facing the domestic uranium industry parallel problems facing the production and use of other valuable energy-related commodities. Viewed in a broader context, uranium is but one of several commodities subject to unfair trade practices by our country's trading partners. Although today's hearing deals with the uranium situation, I believe Congress should consider problems involving the other commodities because they all add up to a serious problem of domestic energy independence that our country eventually must face. In particular, I firmly believe our country is becoming much too dependent upon long-term contracts for the purchase of electricity from Canada. I am pleased that a growing number of public officials are expressing concern about increased electricity imports because I believe electricity very easily could become subject to the same sort of unfair trading practices that have affected commodities like uranium, oil, natural gas, etc.

However, I do not believe the proper answer to this problem lies in retaliation or actions taken against fairly traded products. Aggressive enforcement of U.S. trade laws and the closing of loopholes in those laws which allow other countries to avoid the letter and spirit of free trade is a proper undertaking, but in no way should be lumped into the same category with indiscriminate import restrictions or fees, which I consider to be an improper protectionist reaction.

In my opinion, the real answer to our country's energy problem lies in recognizing the policies that have resulted in the erosion of our domestic energy base because correcting these policies will be far more effective than engaging in the kind of retaliatory trade practices that may seem politically popular, but would be economically disastrous. We need to regenerate our domestic energy industries, not only uranium, but natural gas, oil and electricity. For example, we should not dismiss the likelihood that our customers' growing need for electricity may be better met by the construction of new power plants where a need can be justified than in the building of transmission lines to bring in more electricity from Canada. This, incidentally, would greatly contribute to the revival of our domestic uranium industry.

Having said this, I now would like to provide the Subcommittee with certain facts about my Company's experience in the purchase of supplies from one of our country's largest trading partners, Canada. I do not hold myself out to be a specialist on Canadian energy export policies. I confine myself to the Canadian situation due to a lack of experience with other countries, not due to a lack of concern.

Before I summarize my Company's experience with Canadian energy contracts, I want to emphasize that, above all, Canada acts in a rational manner to ensure that the benefits of her resource development stay in Canada, that the capital and the jobs resulting from these resources remain in Canada. It is in no way surprising, therefore, that Canada often acts in a way detrimental to U.S. interests.

Allow me to summarize three of our experiences with Canadian contracts and explain the effect of Canadian governmental interference. The private companies involved were powerless to change or affect the Canadian government's actions.

DOME PETROLEUM/AMOCO -- A contract involving the purchase of synthetic natural gas feedstock materials. This contract was executed in June, 1971, for deliveries to start in 1973. After the Middle East oil embargo, the Canadian National Energy Board announced that it would restrict the amount of oil being exported from Canada. SNG feedstock, being in part oil, was subject to this restriction. Our company appealed the decision, along with the other two U.S. utilities which were affected and other importers. The U.S. utilities received the full allocation, although the other importers, oil refineries, did not.

IMPERIAL OIL CORPORATION -- A contract involving the purchase of Canadian crude oil. Our contract was signed in March, 1971, for 55.000 barrels per month, increasing to 900,000 barrels per month in 1974-5, at a specified price, which was at that time, approximately $3.00/barrel. In late 1973, when the oil cartel resulted in access restrictions and skyrocketing world oil prices, the Canadian government, through its National Energy Board, imposed an arbitrary tax, originally 40 cents per barrel, rapidly escalating to over $4.00/barrel, finally reaching $8.00/barrel. This tax was justified by the Canadian government on the basis that it did not want its oil prices to be below international oil prices. In other words, it became an unofficial member of the cartel.

In September, 1975, the Canadian National Energy Board released its report, "Canadian Oil Supply and Requirements," announcing the elimination by 1981 of crude oil exports. This policy required the Company to renegotiate its contracts to purchase residual oil, rather than the crude oil specified in the contracts. The National Energy Board explained that this policy was intended to allow export only of fully refined products to stem the potential exporting of jobs, capital and tax income.

UNION CARBIDE -- A contract for the export from Canada of residual oil, beginning in 1977. This was originally a five-year contract, which was later extended at reduced volumes. The Canadian government imposed new "taxes" on the export in amounts which caused the price to be in excess of what it would cost the Company to replace the oil. The announced purpose of this tax was to raise the Canadian export price to the level of the U.S. market price.

In fact, it raised the price far above the U.S. market price. Money collected was used to subsidize its imports of oil for domestic use. The Company was put in a double bind by this unannounced governmental policy. Contracts at market prices provide the seller with market certainty and the buyer with a secure source of oil. If the buyer has no current need for the inventory, it can dispose of the product on the market at or near the price paid for the commodity. However, the tax the Canadians imposed raised the price far above the market price for the commodity so it became impossible to resell at that price. It was also impossible to use, since coal was far cheaper. The Company was forced to abrogate the contract, claiming, among other defenses, an intervening "force majeure" of the Canadian government's taxing action. We are now being sued by Union Carbide for breach of contract.

I wish to emphasize the fact that each of the above actions was taken by the Canadian government, and not by the individual corporations with whom we were dealing. Based on this experience, I would offer the following advice.

1. Remember that Canada is a foreign government with a much more centralized planning function than our own. Its policies and actions, both official and corporate, are coordinated to a degree difficult for Americans to understand. The Canadian government has a very clear policy of ensuring that the benefits of development go to its citizens and takes coordinated action to ensure that this occurs, in spite of pre-existing contractual arrangements.

The government takes an active role in every transaction affecting the development of its natural and energy resources. For this reason, it is unwise to consider a long-term contract, regardless of how artfully drawn, to be other than a year-to-year contract, susceptible at any time to the intervention of government review and action.

2. Canada is vulnerable to the same economic pressures affecting the rest of the world, such as inflation, capital shortages and unemployment. It has rich and abundant natural energy resources which are her most marketable commodities. These resources receive commensurately more governmental attention than other exports since their effect on the Canadian economy is so great.

Canada has become expert in the world of financial maximization of its resources. It limits, where possible, the export of raw material in preference to the export of "value-added" exports, such as fully refined oil products and upgraded uranium. The reasons are simple: this retains the economic, tax and employment benefits in Canada for Canadian citizens. The fact that it has such a severely damaging effect on U.S. facilities is, in all likelihood, to the Canadian government, an unintentional and unfortunate side effect which cannot be helped. This does not mean the effects of the policy are any less devastating in the U.S. It is simply woeful that the U.S. does not have a similar policy for protecting its resources and employment from foreign government policies of market intervention.

3. Traditional notions of contracting and fair play are in the "minds of the beholder." Canadian economic structure is a different animal from the one which exists in the U.S. We have no "crown" corporations. In Canada, it is not unusual for government-owned corporations to coexist with privately-owned corporations since the markets are allocated by governmental entities. It is likewise highly unusual for any U.S. corporation to submit its export contracts to a governmental review board for approval.

I would caution against cultural economic blindness because few other countries in the world conduct business the way we do. As the other economies of the world are becoming more competitive with the U.S. economy, we will be faced more and more with these differences. I am encouraged by the recognition in Congress of problems caused by the lack of an integrated trade policy.

We must begin to look at trade issues in a different light. Is it fair to call a market "free" when it is dominated by government-controlled corporations? Are we really helping American citizens by discouraging development of our domestic resources and replacing them with foreign subsidized imports? Are we being honest with ourselves when we export our dollars to pay for these subsidized imports and call these transactions "free trade"? These are important questions which Congressional Committees such as this one will have to resolve in order to forge policies for the transition to world economy if the U.S. is to be able to retain its position of world leadership.

Finally, I would note as a postscript, that the infamous energy cartels of the Seventies, the oil and uranium cartels, were formed with the encouragement of their respective governments. Canada was the instigator of the international uranium cartel, the purpose of which was to allocate markets and production and to fix prices. Although antitrust actions were brought against the foreign companies involved in the cartel, these governments, including the Canadian government, passed "claw back" statutes which render U.S. antitrust judgments void and unenforceable. The mechanism is in place for a return to those days. We must be ready and competitive to meet this new challenge. We have lost our innocence. As the old saying goes: "fool me once...."

Mr. **Hall**. The Chair now recognizes Mr. Raymond G. Larson of Uranium Resources, Inc.

Mr. Larson.

STATEMENT OF RAY LARSON

Mr. **Larson**. Mr. Chairman, members of the subcommitte, I am Ray Larson, president of Uranium Resources, a small independent producer headquartered in Richardson, TX.

I have three key points to make. First there is no question that DOE and its predecessor's enrichment programs have had a decisive negative influence on the status of the domestic uranium industry.

Second, we are additionally facing unchecked foreign competition from South Africa and Canada whose uranium industries are subsidized and heavily assisted by their home governments.

Third and close to my company and my heart, uranium production and employment are at rock bottom levels every year including Texas. According to DOE statistics, Texas production in 1984 slipped to about one-third of its 1980-81 value.

Mr. Chairman, my company uses the most advanced technology. We are low-cost producers. We currently have two high grade low production cost uranium properties in south Texas with estimated reserves of 10 to 50 million pounds of uranium.

Both properties could be in commercial production within 18 to 24 months with a total capital investment of $10 million for only $1 per pound of capital.

If the industry were viable we would be highly competitive. However, one of our best current alternatives is to sell these assets to offshore interests who are concerned with their long-term abiity to fuel their reactors.

According to a recent Texas socioeconomic output model, each such plant would create in excess of 100 new jobs and approximately $20 million of economic benefit to the local region per year.

In closing, I believe that as a whole, the U.S. industry is as good as any in the world. We have heard of the Canadian high grade ore, but we haven't heard about the other grades, much lower grades and imbalance.

I think the U.S. reserves will hold up and can be competitive. The problems we are facing with the combined forces of our own Government as well as foreign governments—this is not as it should be.

The law says that DOE is supposed to assure a viable domestic uranium industry. The Uranium Resources think it is time to comply with the law. We believe that such is clearly in the national interest.

Thank you.

Mr. **Hall**. Thank you, Mr. Larson. At this time the Chair recognized Mr. James M. Friedman of Benesch, Friedlander, Coplan & Aronoff. Mr. Friedman.

STATEMENT OF JAMES M. FRIEDMAN

Mr. **Friedman**. Thank you very much, Congressman. I will do my very best to hold to the limit that the subcommittee has set. I do want to preface my remarks, I am sorry the chairman is temporarily gone because I know the theme that has recurred here today, he would take note of the significance of the fact that the hearings are being held on the eve of the day on which the very first American League playoff game is being held in Canada. I think that ought to be entered in the record. This is clearly another threat to our sovereignty that should not go unnoticed.

Mr. HALL. It's a day for baseball.

Mr. FRIEDMAN. Yes, it is.

I appreciate very much the opportunity to appear before the subcommittee on this subject. I want to be uncharacteristically modest in prefacing my remarks by saying I am in no way an expert in the uranium trade or uranium mining business. My purpose in appearing here today I think is to attempt to share with the subcommittee my perspective derived from my studies of the international trade in electricity.

I have found striking parallels and I think some of the information will be instructive for the committee in shaping future policy. Within the restrictions of my 5 minutes, I would like to point out that the activities of the Canadian Government and its various entities in the uranium trade closely parallel what I have found n the transboundary trade in electrical generation; that is, we have experienced yet another facet of a highly coordinated and carefully thought-out Canadian initiative in all energy trade. That is, over the last decade or so, Canadian exports of electricity into the United States have grown at an astounding rate.

I would point out for instance in 1976 net United States imports of Canadian electricity totaled 9,214 gigawatt-hours. By last year we had reached in excess of 38,000 gigawatt-hours, an increase of more than fourfold. The increase is even more dramatic when measured in terms of the actual value of those imports into this country. They have risen from the 1976 figure of a relatively small amount, $104 million, to over $1.3 billion, measured in Canadian dollars.

Clearly, the trend is evident. The Canadian Government controls, either at the Federal level or through various Province governments, this trade. It is deemed to be an extremely profitable and highly valuable trade for the Canadians. It is anticipated that not only will this trend continue, but we possibly expect to see it accelerate in the near future as newly signed contracts are implemented.

As Chairman Markey indicated earlier, a number of New England States and companies have signed large contracts for the importation of electrical power from Quebec and Ontario, and those will begin to add to the totals I have already cited. The benefits to Canada of this trade are well documented. This is a highly profitable trade. The pricing mechanism is one I would urge the subcommittee to study carefully, the so-called avoided cost formula, which I prefer to call whatever the trade will bear.

The Canadians price their electrical exports to us not based on the cost of their production, but simply they are guided by their Government in pricing the exports at just barely below whatever the next least expensive alternative is in the United States.

Second, this trade creates an enormous benefit in jobs, both operating jobs and construction jobs in Canada. All of those jobs are exported from the United States. The utility workers union estimated in 1983 sometime ago that over 13,000 jobs had already been exported to Canada, simply in the operation of these plants, and 150,000 man-years of construction time. I believe that the parallel to what is happening in the uranium industry here is quite clear for the subcommittee to look at.

In addition, I believe that there are significant national security and energy independence issues for the subcommittee to consider in both the importation of Canadian electricity and the importation of foreign, particularly Canadian, uranium. I hope the subcommittee will attend to those issues not only in the context of the uranium industry, which is suffering a dramatic impact, but as an overall assessment of Canadian energy trade policies vis-a-vis the United States. I want to thank you again for the time made available to me.

Mr. HALL. Thank you, Mr. Friedman.

[Testimony resumes on p. 275.]

[The prepared statement and supplement of Mr. Friedman follow:]

BEFORE THE
CONGRESS OF THE UNITED STATES
HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON ENERGY CONSERVATION AND POWER
OF THE
COMMITTEE ON ENERGY AND COMMERCE

STATEMENT OF JAMES M. FRIEDMAN

WASHINGTON, D.C.
OCTOBER 8, 1985

My name is James M. Friedman. I am a partner with the law firm of Benesch, Friedlander, Coplan & Aronoff in Cleveland, Ohio. My purpose in appearing before you today is to provide a broader perspective on the dynamics of the energy trade between the United States and Canada. This information may provide some insight into an appropriate national policy toward the specific problems of American uranium producers that you are considering today.

I would like to make it clear that I do not hold myself out as an expert on the particular issues confronting American uranium producers or on Canadian-American uranium trade as such. My experience lies in other energy issues, particularly in the electricity trade between Canada and the United States. My practice over the past several years has focused on public policy issues involved in the transmission of electrical energy and on various Clean Air Act issues, including acid rain.

I have studied the recent lobbying and marketing initiatives on energy issues undertaken by the Canadian government to influence public opinion and policy in the United States. That study culminated in the publishing of my book, The Silent Alliance, by Regnery Gateway in 1984. This book analyzed the rapid growth of Canadian electricity imports into this country since the mid-1970's and suggested that it might be prudent for the Congress to consider the impact of this trade when considering certain legislative proposals, such as those on acid rain. An update of The Silent Alliance appeared in the May/June 1985 issue of LandMARC magazine which analyzed the continuing developments in Canadian-American transboundary electricity trade.

My statement today provides an overview of those findings and a further updating of developments in Canadian-American electricity trade. This analysis of the transboundary electricity trade, which I had arrived at independently of developments in uranium trade, indicates that striking and instructive parallels may exist between Canada's aggressive activities on both fronts.

The Growth of Canadian Electricity Imports

There can be no doubt that the Canadian-American electricity trade has skyrocketed over the past decade. More specifically, Canadian electricity sales to the United States have increased dramatically both in the amount and value of those sales.

Table 1

YEAR	NET U.S. IMPORTS (in gigawatthours)
1976	9,214
1977	17,267
1978	19,510
1979	29,264
1980	26,720
1981	33,899
1982	32,371
1983	35,652
1984	38,092

Table 2

YEAR	DOLLAR VALUE OF CANADIAN EXPORTS OF (in million Canadian dollars)
1976	$104.9
1977	173.8
1978	419.3
1979	478.6
1980	738.5
1981	793.6
1982	1,143.9
1983	1,237.0
1984	1,305.0

Clearly, these figures involve a significant amount of energy and revenue.

Although Canadian imports currently account for only 1-2% of the total American electrical generation, the relevant markets to analyze are those areas which receive the bulk of the imports. For example, New York is currently 10% - 15% dependent upon Canadian electricity. The comparable figure for New England is 5% but the future dependence of New England is potentially much higher.

These imports will grow quickly in the next few years as contracts already signed begin to come into effect. Hydro-Quebec will sell 33,000 gigawatthours to the New England Power Pool over an eleven year period beginning in 1986. Hydro-Quebec will also sell 24,000 gigawatthours to New York State over the next eleven years. Manitoba Hydro will begin selling $3.2 billion worth of hydro-electricity to Northern States Power from 1992-2004 if a new hydro generation facility can be built in Manitoba by that time. Atomic Energy of Canada, Ltd., the government owned manufacturer of the CANDU reactor, has estimated that annual exports could climb to 52,000 gigawatthours during the 1990's. A study completed by the Canadian Energy Research Institute in 1982 projected that Canada's annual electricity export revenues could expand to over $4 billion by the year 2000.

Canadian electrical production policy must be viewed as Canadian governmental policy because all of the major electrical generation facilities in Canada are owned and operated by the provincial governments. Ontario Hydro is a "crown corporation", that is, government-owned corporation of the Province of Ontario. Hydro-Quebec is a government-owned corporation of the Province of Quebec. Any U.S. governmental action in regard to electricity imports would only redress the balance of fairness upset by Canadian governmental policies.

Even though the provinces are governed by different political parties, the overall Canadian policy to increase exports cuts across all political lines. The Liberal party government in Ontario, the Social Credit party government in British Columbia on [illegible] west coast, the Conservative party government in New Brunswick on [illegible] east coast, the formerly separatist Parti Quebecois government in Quebec and the New Democratic Party government in Manitoba are uniformly engaged in efforts to expand their electricity export markets in the United States. Provincial debates tend not to center on whether electricity exports to the United States are desirable, but on the appropriate level of exports. In Quebec, for example, there is a debate between the ruling Parti Quebecois and the opposition Liberal Party over whether Hydro-Quebec should export more electricity to the United States or, under plans proposed by Liberal opposition leader Robert Bourassa, export substantially more electricity to the United States.

Each of the provinces has undertaken or is contemplating massive construction schemes to increase their capacity to make additional electricity available for export. Manitoba Hydro recently began construction of the Limestone station, a $2.1 billion hydro generating facility on the Nelson

River in northern Manitoba. This project is approximately 500 miles north of Winnepeg which itself is over 200 miles north of Fargo, North Dakota. When completed, this station will have 1,280 megawatts of generation capacity, which is the equivalent of 64% of the capacity of the hydro facility on the Canadian side of Niagara Falls.

In 1984, Hydro-Quebec opened 3,300 megawatts of generating capacity at the La Grande 2 hydro-electric plant. When that project is completed at a total cost of $10.7 billion, it will have a capacity of 10,300 megawatts. By way of comparison, the Grand Coulee Dam, the largest in the United States, has a capacity of only 6,400 megawatts.

New Brunswick Power has constructed a nuclear plant at Point Lepreau which currently exports over 33% of its generation to the United States. New Brunswick is currently examining plans to build a second reactor at Point Lepreau which would serve the American market exclusively.

In 1982, Ontario Hydro proposed placing a transmission cable across the floor of Lake Erie in order to provide sufficient transmission capacity that would allow Hydro to contract with General Public Utilities. That project ultimately failed when GPU was able to secure more favorable terms from Detroit Edison. This unique transmission project, an underwater transmission line, highlights the fact that all of these massive construction projects in the northern parts of Canada's provinces require new and lengthy transmission line construction in order to send the electricity to where it can be used. It also highlights the creativity with which the Canadians approach sales of electricity to the United States.

The Reasons Behind Canada's Electricity Exports

What drives the Canadian provinces, with their differing political philosophies, to take such risks in developing enormous and costly generation and transmission facilities? There are several reasons. First, Canada is an energy rich country. Canada is the only one of the 24 countries in the Organization of Economic Cooperation and Development which will remain energy self-sufficient for the foreseeable future. Canada has rich reserves of oil, natural gas, coal, and apparently, uranium. Canada also has numerous sites for hydro-electric generation that remain to be developed. Quebec Liberal leader Robert Bourassa, in his recent book Power from the North, estimates that Quebec has 40,000 megawatts of hydro-electric generating capacity waiting to be developed. This is nearly twice the entire present electrical generating capacity of the New England Power Pool. Energy, therefore, is a product which Canadians can sell and not threaten their national security or significantly deplete their nonrenewable natural resources. Canada sold over $10 billion worth of energy to the United States in 1984.

Sales of electricity are particularly profitable in Canada because of the type of export pricing mechanism required by Canada's National Energy Board. Canadian exports of electricity are not priced on the basis of the cost of generation as domestically produced electricity is priced, but on the purchaser's "avoided cost". For example, an American utility spending approximately 9¢ per kilowatthour (kwh) to generate electricity from its oil-fired capacity might be offered Canadian hydro-electricity for approximately 7¢ per kwh even though it only cost the Canadians approximately 3¢ per kwh or less to generate and transmit that electricity. One example of the enormous profits which can be garnered by avoided-cost pricing can be seen in Manitoba

Hydro's projections that its new Limestone generating station will earn an estimated $1.7 billion profit on $3.2 billion in electricity sales to the United States. Incredible as this may sound, this price is still viewed as a bargain by American utilities because it is cheaper than their alternative. Nevertheless, the avoided-cost pricing formula illustrates the enormous profitability which can be achieved by the Canadians through electricity exports.

A second reason why Canada's provinces are so keen on electricity exports is the number of jobs involved. John Jay, President of the Utility Workers of America, estimated in 1983 that the level of Canadian electricity imports entering the United States at that time cost 13,000 jobs in the utility industry alone. Construction to replace the generating capacity displaced by those exports would have provided construction workers with 150,000 man-years of work. Those jobs were transferred to Canada.

We must remember that the Canadian utilities are instruments of the provincial governments which can use and have used electrical generating projects as public works employment projects. Manitoba Premier Howard Pawley claims that the Limestone project will create 6,000 construction jobs and 13,000 spin-off jobs. Robert Bourossa was elected Premier of Quebec in 1970 in part by promising to create thousands of jobs with what became the La Grande project. His latest proposal to develop additional sites in the James Bay area of Quebec promises to generate approximately 195,000 man-years of work in Quebec over a ten year period and an additional 40,000 man-years of work throughout the rest of Canada. Clearly, this amount of employment provides a significant boost to a provincial economy.

The third reason why Canadian provinces construct these projects is the perception that sales of the output can be used to finance the construction of the facility itself. Although Canada has no need for the output of these plants at this time, nor in the foreseeable future, the provinces project that they can generate enough income to pay for construction of the project by "pre-building" these plants in advance of Canadian need and exporting the electricity. Once Canadian electrical demand grows sufficiently, the exports are terminated and, as former Energy Minister Jean Chretien once stated, Canada gets the facility "for free." This policy was well described by the Canadian newsweekly, Macleans in October, 1982:

> The new plan may prove to be a cripplingly expensive failure - or a shrewd method of getting the Americans to help pay for part of Canada's future electricity supplies. The program calls for the immediate construction of at least one eastern Canada CANDU reactor to supply electric power to utilities in the northeastern United States. At some time near the turn of the century the Americans would be cut off, and the reactor's electrical output could be redirected to meet domestic needs.

This demonstrates the rational, long-term approach which Canada has toward development and protection of its energy facilities.

Canada must export the electricity generated by these facilities to the United States in order to implement this "pre-building" policy. Without sales of the product, the "pre-building" scheme would be an enormous boondoggle. The debt service on the construction loans would become a huge burden on a province's finances. Hydro-Quebec has already experienced part of the pressure from meeting interest payments on the current La Grande project that approach $1 billion a year. In order to finance that debt, Hydro-Quebec's long range development plan specifically targets export sales as a prime method of generating additional revenue. This has caused the company to install new province-wide technical controls which give Hydro-Quebec a better understanding of the amount of power it has available for sale. Hydro-Quebec has also opened a sales office in New York City to expand its market share in the eastern United States.

Canada's federal government is taking similar steps to protect the Canadian nuclear industry which is currently facing economic problems. This industry, which produces the CANDU reactor, employed approximately 36,000 people in the early 1980's. At that time it was apparent that the domestic market for CANDU reactors had been saturated and the plants contracted for sale to other countries were nearly completed. The Canadian government began to search desperately for additional sales. Prime Minister Pierre Trudeau travelled to Mexico and South Korea in search of sales. Canada began discussing a second reactor at Point Lepreau which would dedicate its output for the United States. A sale of a CANDU reactor to Romania which had been on hold for several years suddenly went through when Canada agreed to an unusual barter deal to subsidize the transaction. Canada will accept Romanian products such as tractors, shoes, clothing, wire, and frozen fruit as payment for nuclear reactors. Another sale was made to Turkey in August, 1985 after Canada agreed to finance, build and operate the reactor with a maximum payback period of 15 years. At that time, the reactor will be turned over to the Turkish authorities. Several others had competed for this project, including an American-Japanese team of Westinghouse and Mitsubishi, but they were unwilling to meet the terms required by Turkey.

The purpose of these subsidies for CANDU has been articulated several times by Canadian spokesmen. Without additional sales, the firms involved in the Canadian nuclear industry would be out of business by the mid-late 1980's. Canada would then be without the expertise needed to develop the next round of

CANDU generators which are projected for the later 1990's. Despite being rich in other forms of energy, Canada has been willing to subsidize these sales rather than allow its nuclear expertise to dissipate. Canada recognizes that the technical expertise of the CANDU workers is a natural resource as deserving of protection as oil, gas, or coal deposits. This is another example of the long-term approach taken by the Canadian government toward its energy sector.

The final factor which has driven the nearly uniform Canadian efforts to expand electricity sales to the United States can be traced to the economic and political nationalism adopted by Canada since the late 1970's. A key element of this economic nationalism was former Prime Minister Pierre Trudeau's National Energy Policy (NEP) of the early 1980's. You may recall that this policy evoked loud protests from American companies with interests in Canada because the NEP, through a variety of measures, penalized those companies operating in Canada which were not Canadian-owned. The Canadian provinces began their intensive marketing of Canadian electricity sales to American utilities at about the same time. Some of the more onerous provisions of the NEP were dropped after world oil prices stagnated, but the enthusiasm in Canada for Canadians developing Canada's natural resources has not waned. Certainly, other policies born of that economic nationalism, such as increased electricity exports, have not waned. The trade promotion policies of current Prime Minister Brian Mulroney have only an encouraging effect on electricity sales.

The Canadian approach to long-term energy development contrasts sharply with the current prospects of the American uranium production industry. It would appear that American governmental policies, such as those of the

Department of Energy, are not even neutral but hostile to the survival of the American uranium industry. By way of contrast, the Canadian government has no such policy which is hostile to the long-term survival and prosperity of any sector of the Canadian energy industry.

Reasons for American Concern About These Imports

This description of Canada's policies toward its domestic energy producers has ramifications upon American policies of energy development. This Subcommittee should examine the impact of Canadian energy trade policies upon the United States.

First, this Subcommittee should consider whether the massive transfer of jobs to Canada, whether by purchasing Canadian electricity or by purchasing Canadian uranium, is in the national interest of the United States. The numbers quoted above are, on the whole, staggering. This issue becomes more important as American utilities are pressed to purchase firm Canadian power as opposed to interruptible power or to purchase Canadian uranium. There is an argument that the purchase of interruptible power does not cost many jobs because American utilities must still build and maintain sufficient generating capacity for peak periods. Where firm power is purchased, however, American utilities forego construction of domestic capacity and forego jobs for American workers. The same holds true for the closure of American uranium facilities and failure to expand or build new ones.

The issue of transferring jobs to Canada is important because there is growing sentiment in this country to increase this country's reliance upon firm Canadian power. One Congressional Research Service study prepared in May 1984 has suggested that Canadian electricity could be used to "backout" construction of both Seabrook I and Seabrook II. Since 45% of all the new generating capacity planned to come on line in Canada over the next eight years will be nuclear, it is possible that the replacement Canadian power could be nuclear generated, as from Point Lepreau, which would be a direct transfer of jobs from a nuclear facility in the United States to one in Canada.

More importantly, there is serious cause for concern at the forecast by Canadian Nuclear Association Chairman Hal C. Dickout at a conference in Ottawa this summer that it is "probable" that Canada will construct five nuclear facilities over the next 15 years, all dedicated to exporting their output to the United States. There is a serious inconsistency in any policy that opposes nuclear generated electricity in the United States, but will accept nuclear generated electricity from Canada. It is an anti-labor attitude that opposes the construction of nuclear plants in the United States, but supports the construction of nuclear plants in Canada. Those policies are only compounded by any policy that allows the development of the natural resource for those reactors, uranium, to be transferred to Canada as well.

Second, this Committee should consider whether increasing reliance on a foreign source of energy is in the national interest. I do not claim that Canadians are, as some have put it, "blue eyed sheiks." I do believe that it is important to stress that Canada is a foreign country with its own separate and distinct national interests and aspirations. Those interests and aspirations can and do differ from those of this country. If you think of Canada as a "fifty-first state", you will be in for a surprise when you suggest this to a Canadian. The point here is that Canadian officials have already stated that they plan to turn off the electricity export flow once Canadian demand grows sufficiently. Long-term contracts may not provide adequate protection for American consumers. It is unrealistic to expect that the Canadian public at some future date will tolerate the construction of newer, and presumably more expensive, generating facilities for their own needs while American utilities continue to receive lower priced electricity under contracts signed decades earlier. A dose of political reality is all that is suggested by this reference to the national interest of the United States, but recognition of Canada's unique interests in exporting power should temper the type of rush for lower cost energy which led the United States to rely so heavily upon Middle East oil. Certainly developments in uranium trade are parallel to these concerns, especially given the long lead times, uncertainty and heavy investment required to bring the uranium industry in this country back to productivity in the event of a disruption or change in Canadian policy.

Third, this Subcommittee should examine the technical reliability of an increased dependence on Canadian power. It is useful to recall that many of the new Canadian facilities are being built at or near the Arctic Circle. The power generated there must be transmitted across hundreds of miles of harsh terrain. Strictly from a viewpoint of technical reliability, it should be determined whether the Canadian supply of electricity to the United States can be deemed secure. You may be aware that Quebec Hydro has a reputation for unreliability, the most notorious recent episode being a 12 hour province-wide blackout in December, 1982. You may also be aware that the Great Northeast Blackout of 1965 began with an equipment failure at Ontario Hydro. Ontario Hydro's nuclear reactors are now undergoing an extended and expensive retrofitting program designed to repair design flaws in the CANDU reactor. Before the market mechanism and others drive American utilities to rely upon

Canadian power, the American government should examine whether Canadian transmission capacity and equipment reliability meet American standards.

Fourth, this Subcommittee should examine the pricing structure of Canadian electricity imports. The avoided-cost pricing system appears to have a patent unfairness about it. The sole redeeming feature of this system is that it is only slightly less than that which the market will bear. More importantly, where the avoided-cost is based on displaced oil generation, Canadian electricity imports are the equivalent to oil imports. As world oil prices rise or fall, Canadian import prices will rise or fall even though no change has taken place in the underlying costs of the generation of that electricity. The increasing instability of the world oil market is therefore built into these Canadian electricity imports. In similar fashion, the pricing practices of the government-supported Canadian uranium producers seem to have the same kind of predatory objective in artificially underpricing domestic competition.

The long-term contracts for Canadian electricity pose another problem for the United States. Contracts are being proposed for increasingly long periods, up to 35 years in one case. It is unlikely that these contracts provide for the same type of flexibility which is now required of contracts for Canadian oil and gas. It is the emerging policy of the Federal Energy Regulatory Commission that long-term contracts for supply of Canadian natural gas must be flexible enough to deal with changing economic circumstances. However, the Canadian provinces are unwilling to undertake the debt involved in constructing new electrical generation facilities without some assurance that the electricity will be sold. Many Canadian contracts include "take or pay" clauses under which the American utility would pay even if it did not need or accept the electricity. The dangers of "take or pay" contracts was demonstrated by the number of natural gas purchase contracts that were breached during the natural gas glut over the past few years.

The dangers of being locked into a disadvantageous long-term contract for electricity trade has been demonstrated by the Province of Newfoundland. In 1969, Newfoundland entered into a 65 year contract with Quebec under which Quebec would purchase all of the output from the Churchill Falls hydro generating station for 0.22¢ per kwh. Today, Quebec resells that power for up to fifteen times as much to the United States. Quebec has stubbornly refused to renegotiate the contract in light of the changed economic circumstances despite numerous political and legal initiatives of Newfoundland to force a renegotiation. This issue has turned into one of the most bitter interprovincial disputes in Canada. Therefore, the flexibility of long-term contracts is yet another factor which should be considered.

Recommendations for American Energy Policies

This analysis of Canadian energy policies demonstrates that certain changes are needed in American energy policies. Some changes are lessons learned from the Canadians. Other changes are responses to the Canadian policies themselves. I will only mention two of the most important.

First, the United States must develop a long-term strategy toward development and enhancement of its energy resources. Canadian policies provide support for different types of generating facilities, for development of new generating facilities, and for the workers involved in the energy industries. The imminent disappearance of the American uranium mining industry should call forth a response from the United States government to enable this industry to survive. More importantly, this response is necessary to protect the uranium resources themselves. Many companies are required to flood mines upon closing for safety reasons, effectively destroying the remaining ore because flooded mines cannot be reopened.

Second, the United States government should adopt a consistent policy approach toward Canadian energy imports. It is foolish to prohibit long-term, take-or-pay contracts for gas purchases, but allow such contracts for electricity supplies. It is unnecessary to construct unique transmission capacity to the Arctic tundra when upgrading and development of a Midwest-Northeast intertie can relieve the Northeast of dependence on high-priced oil-fired electricity with coal-fired electricity. It is foolish to back out construction of nuclear facilities in the United States only to rely upon nuclear generated electricity from Canada. Continuation of present trends may well result in a growing American dependence upon nuclear power, but with the employment benefits from uranium production, plant construction and electricity generation enjoyed by Canada. This area of the national interest demands that the United States transboundary energy policy not be created in a vacuum where only short-term benefits are analyzed.

I urge this Subcommittee to take a closer look at the dramatic expansion of Canadian electricity and uranium imports and this country's response to the broad Canadian initiatives to penetrate the American energy market. Many of these issues should be raised in this Subcommittee's consideration of H.R. 3074, proposed by members of the Northeast-Midwest Coalition's Task Force on Electricity. These imports raise certain issues that should be examined on their merits. They also demonstrate the economic and political milieu from which Canadian energy policy is made, which is illustrative as a comparison and contrast toward the current situation of the American uranium producers. The aggressive marketing and governmental subsidies which the Canadians have displayed in the electricity sector are consistent with the governmental intervention and dumping practices which the Canadians are displaying in uranium trade. Canadian practices in these two energy sectors do not constitute fair trade. This Subcommittee should take action accordingly.

Supplemental Statement of James M. Friedman
October 15, 1985

At the hearing on October 8, 1985, Congressman Markey expressed a concern that the Canadian government might respond to American action to protect domestic uranium producers by retaliating in the area of electricity exports to the Northeast. There are several reasons why such retaliation should not be a concern at this time.

Since the Canadians employ an avoided-cost method of pricing electricity exports, it is very unlikely that they would forego the enormous profits that these exports generate to engage in a retaliatory gesture. The pervading philosophy of the current Canadian government is that Canada cannot afford to engage in a trade war with the United States. This philosophy applies directly to the sector of electricty exports because the Canadian provinces currently need the revenues generated by these exports to finance the debt on many of these power generation facilities. In addition, the Canadians realize that an interruption of electricity exports at this time, for any reason, would doom their plans to enter into contracts for construction of new generation facilities "dedicated" for export only. Therefore, it is highly improbable that the Canadian government would take retaliatory steps in the electricity trade sector in response to any American action aimed at supporting the domestic uranium mining industry.

The long term prospects for this country's continued and increased dependence on Canadian electricity unrelated to uranium trade developments is a different matter. Several of the factors which make electricity exports important to the Canadians may disappear in a few years. The debt on the generation facilities may become more manageable. The profits may not be so great if oil prices continue to slide. More importantly, Canadian demand for electricity will rise sufficiently to give Canada a market for the electricity it currently exports. The chances of these exports being terminated in the future, in response to American actions or Canadian needs, is highly probable.

In summary, this Subcommittee should have no fears about Canadian retaliation in the electricity trade sector if Congress acts to support the American uranium mining industry at this time. However, the mere fact that this question was raised amply illustrates the chilling effect which is inherent in becoming overly dependent upon electricty generated in Canada.

Mr. Hall. Thank you, Mr. Friedman. At this time the Chair recognizes Mr. Nolan Hancock, citizenship-legislative director for Oil, Chemical and Atomic Workers Union.

STATEMENT NOLAN W. HANCOCK

Mr. Hancock. Thank you, Mr. Chairman, members of the subcommittee. My name is Nolan Hancock and I am legislative director for the Oil Chemical and Atomic Workers International Union. We are the union that used to represent many of the employees that were employed in the domestic uranium industry. I underscore the words "used to" because the employment in the industry has dropped from 22,000 down to 2,000. I would like to discuss the human cost of that.

The human costs of that collapse has been enormous. The focus of this was in a leading article in the June 12 edition of the Wall Street Journal. I would like to just quote a couple of things. It says:

> In Grants, therapists are struggling with heavy caseloads of victims of alcoholism, family breakdown, abuse of wives and children, and deep insecurity. Local 2-706 of the Oil, Chemical and Atomic Workers, once 300 strong, is down to about 25 members; its president, Mr. Ortiz, recently lost his own job. "If our members homes weren't paid for, they lost them and all their credit too," he says. "How can they ever buy homes again? There is just tremendous frustration."
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> In neighboring Milan, some remaining miners eke out a living by selling firewood or harvesting, on hands and knees, pinon nuts from the forest. The city water department accepts $3 partial payments, painfully accumulated by families, on $15 monthly bills. "These are proud people who don't want charity," Mayor Toby Michael says. "It just breaks your heart to see this happen to friends who've lived here 20 years."
>
> East of Grants, Indians of the Laguna Pueblo stare into the pits of the mammoth Jackpile-Paguate Mine, closed for good. Once an agrarian people, the Lagunas had, for 30 years, increasingly abandoned fields and pastures to rely on a resource now no longer needed.

Mr. Chairman, there are at least two reasons that this state of affairs is deeply upsetting. First, it violates the law. In 1964, Congress enacted a proviso to section 161(v) of the Atomic Energy Act. That proviso said that the Atomic Energy Commission "shall assure the maintenance of a viable uranium industry."

Second, much of this collapse has been brought about by unfair foreign competition and unhelpful policies by our own Government. There is published evidence, which all our officials take great pains to ignore, that Canada has subsidized its industry in the billion-dollar-plus range and is pricing its product much lower in the United States than on the Canadian home market, or to other markets.

Let me just tell you, it's that type of trade problem, that is, managed trade problems by other countries, that has caused many of our domestic industries to collapse. We can look at the fertilizer and ammonia industry. We can look at the petrochemical industry and the steel industry and the auto industry and many of those suffer from the same problems of managed trades by other countries while we have a no-trade policy in this country.

It is our opinion that the Nation's uranium industry not only is nonviable but also is in the very verge of extinction. If we are to preserve a domestic uranium industry, along with the jobs and energy independence which it represents, we must act on an urgent basis.

Let me turn for a moment to what can be done. First, there should be some meaningful compliance with section 161(v). The Department of Energy has a statutory obligation, codified in section 161(v) of the Atopmic Energy Act, to "assure the maintenance of a viable domestic uranium industry."

Second, there should be appropriate action to counterbalance the unfair foreign trade practices and foreign government machinations faced by our domestic producers.

Third, Congress should adopt a mechanism to more equitably distribute the billion-dollar costs of reclaiming existing uranium mill tailings. When the contracts associated with these tailings were entered, no one recognized that hazards were posed, or costly reclamation would be required. It is appropriate to share the costs of this reclamation among those who benefited from the uranium produced, and such a system is ably provided in H.R. 2236.

Mr. Chairman, I have made three suggestions, and they are important suggestions, for they will breath some necessary life into an industry that has taken a terrible beating in the last few years. OCAW believes that nuclear electrical power can and should make an important contribution to our national energy picture.

Nuclear electrical power has suffered many blows in the last 10 years, and it is, we feel, time to come to grips with its problems and to reach meaningful solutions to them. We believe that this would be in the best interests of our country, our utilities, our nuclear fuel and uranium industries, the workers we represent and their communities, and our energy future.

Thank you.

Mr. HALL. Thank you, Mr. Hancock.

[The prepared statement of Mr. Hancock follows:]

STATEMENT OF NOLAN W. HANCOCK
ON BEHALF OF THE
OIL, CHEMICAL AND ATOMIC WORKERS INTERNATIONAL UNION

Mr. Chairman and members of the Subcommittee, my name is Nolan W. Hancock. I am Citizenship-Legislative Director for the Oil, Chemical and Atomic Workers International Union which used to represent many of the workers employed in the domestic uranium industry. I underscore the words "used to" because employment in the industry has dropped from approximately 22,000 to less than 2,000. Uranium production has dropped from almost 44 million pounds per year to less than 10 million. Only about 3 of our 25 mills are still in operation.

The human cost of this collapse has been enormous. This was a focus in the leading article in the June 12, 1985 edition of the Wall Street Journal. I think it's important to reiterate the words of that article:

> In Grants, therapists are struggling with heavy caseloads of victims of alcoholism, family breakdown, abuse of wives and children, and deep insecurity. Local 2-706 of the Oil, Chemical and Atomic Workers, once 1300 strong, is down to about 25 members; its president, Florentine Ortiz, recently lost his own job. 'If our members' homes weren't paid for, they lost them and all their credit too,' he says. 'How can they ever buy homes again? There is just tremendous frustation.
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> In neighboring Milan, some remaining miners eke out a living by selling firewood or harvesting, on hands and knees, pinon nuts from the forest. The city water department accepts $3 partial payments, painfully accumulated by families, on $15 monthly bills. 'These are proud people who don't want charity', Mayor Toby Michael says. 'It just breaks your heart to see this happen to friends who've lived here 20 years.
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> ....East of Grants, Indians of the Laguna Pueblo stare into the pits of the mammoth Jackpile-Paguate Mine, closed for good. Once an agrarian people, the Lagunas had, for 30 years, increasingly abandoned fields and pastures to rely on a resource now no longer needed.

Mr. Chairman, there are at least two reasons that this state of affairs is deeply upsetting. First, it violates the law. In 1964, Congress enacted a proviso to Section 161(v) of the Atomic Energy Act. That proviso said that the Atomic Energy Commission (AEC) "shall assure the maintenance of a viable uranium industry." Pursuant to this provision, the old AEC limited enrichment of foreign uranium for domestic use. The Commission's successor, the Department of Energy (DOE), allowed these restrictions to expire in the period 1978-83, albeit with a promise to reimpose them if the industry crumpled. The industry crumpled but DOE was nowhere to be seen. This violates a commitment by our government on which 20,000 unemployed people and their local communities relied.

Second, much of this collapse has been brought about by unfair foreign competition and unhelpful policies by our own government. There is published evidence, which all our officials take great pains to ignore, that Canada has subsidized its industry in the billion dollar plus range and is pricing its product much lower in the U.S. than on the Canadian home market, or to other markets. Similarly, South Africa, another source of uranium imports, is illegally exploiting Namibian ore and is producing its uranium under the discriminatory wage structures and working conditions that go under the name of Apartheid. As to our own government, DOE's enrichment policies were geared to an enormous expansion in nuclear power and when that did not occur, resulted in a glut of uranium which is depressing our industry. DOE will survive because there are taxpayers to rescue it; the prognosis for our private uranium industry is more guarded.

It is our opinion that the Nation's uranium industry not only is non-viable but also is on the very verge of extinction. If we are to preserve a domestic uranium industry, along with the jobs and energy independence which it represents, we must act on an urgent basis.

Let me turn for a moment to what can be done. First, there should be some meaningful compliance with Section 161(v). The Department of Energy has a statutory obligation, codified in Section 161(v) of the Atomic Energy Act, 42 U.S.C. S2201(v) to "assure the maintenance of a viable domestic uranium industry." This provision is to assure a vigorous and expanding domestic uranium industry, to assure U.S. uranium self-sufficiency, to provide employment, to protect our national security and to provide for our energy independence. DOE is failing to implement Section 161(v). To the contrary, the agency has taken a number of actions which appear to be decreasing demand for uranium.

Second, there should be appropriate action to counterbalance the unfair foreign trade practices and foreign government machinations faced by our domestic producers.

Virtually all new contracts for uranium signed by utilities in the United States are for uranium produced abroad. Foreign governments have heavily supported and subsidized their own uranium industries. These industries are now selling their surpluses here at prices below those in their home markets and they pour hundreds of millions in government cash into their own uranium development projects. Our uranium industry cannot survive in the face of this kind of "competition."

Third, Congress should adopt a mechanism to more equitably distribute the billion dollar costs of reclaiming existing uranium mill tailings. When the contracts associated with these tailings were entered, no one recognized that hazards were posed, or costly reclamation would be required. It is appropriate to share the costs of reclamation among those who benefitted from the uranium produced, and such a system is ably provided in H.R. 2236, a bill currently pending before Congress, which we are happy to support.

Mr. Chairman, I have made three suggestions, and they are important suggestions, for they will breath some necessary life into an industry which has taken a terrible beating in the last few years. But in the long term, the health of the domestic uranium industry, and the entire U.S. nuclear fuel industry, is linked to the health of our nuclear electrical power industry. OCAW believes that nuclear electrical power can and should make an important contribution to our national energy picture. Nuclear electrical power has suffered many blows in the last ten years, and it is, we feel, time to come to grips with its problems and to reach meaningful solutions to them. We believe that this would be in the best interests of our country, our utilities, our nuclear fuel and uranium industries, the workers we represent and their communities, and our energy future.

Thank you.

Mr. HALL. I think that completes the panelists. Everyone had their 5 minutes, more or less. I think David Berick, director of the nuclear waste and safety project of the Environmental Policy Institute, could not make it here due to a schedule conflict. Unless there is opposition, we will have his statement put in the record. Is there objection?

The Chair hears none. It will be placed in the record.

[See p. 297.]

Mr. HALL. I guess, to start out, I will ask a question or so here. I may ask Mr. Hancock, you talked about the no-trade policy.

Mr. HANCOCK. Yes, sir.

Mr. HALL. Or the "poor performance policy" could be another word for it, could it not?

Mr. HANCOCK. That would be another word for it; yes, sir.

Mr. HALL. I guess you can count them in numbers of Presidents. How long has it been since we have had a President that had a good trade policy? How did we get to where we are with the deficits that we have?

Mr. HANCOCK. Well, back in the early seventies, we had less than 10 percent of our economy based on foreign trade.

Mr. HALL. How was your balance of trade in the early seventies?

Mr. HANCOCK. Our balance of trade was in good shape in those days, but as we have moved to a situation where 70 percent of the goods that are produced in this country are subject to competition from foreign governments, other governments have set up trade policies which inhibit our products from getting into their countries and at the same time they subsidize and target the markets in the United States and drive our companies out of business. I can give you a number of examples of that.

Mr. HALL. We know that here. We don't need examples. I also want to ask of Dr. Neff—I know you are aware of the imbalance that we have in Japan, trade imbalance. By the way, we have spoken of Canada here. Canada, one of the four major offenders of the balance-of-trade problems that we find ourselves with here, with Japan being of course one, Taiwan and West Germany the others, of the Big Four. You are aware, are you not, of the fact that the Japanese subsidize their steel industries?

Mr. NEFF. I think that has historically been the case. It's also a very competitive market within Japan and outside, I believe now.

Mr. HALL. While there may be other reasons, but do you not agree that with us spending somewhere around 7 percent of our gross national product, defending our shores and their shores and other shores, and them spending less than 1 percent gives them the elbow room to spend their money subsidizing steel to the detriment of our domestic companies?

Mr. NEFF. I think the situation may be more complicated than that.

Mr. HALL. Is that a bad statement? Is that not true?

Mr. NEFF. I think, taken as the only statement about the problem, it would be incorrect. I believe there are other elements in the trade problem which involve competitiveness, modern facilities and other things which enter into that.

Mr. Hall. OK. Yet you say that the problem is not of foreign origin here. The domestic uranium problems are not of foreign origin but of domestic origin. I don't totally understand that.

Mr. Neff. Let me clarify that point just a little bit. To date, imports of uranium into the United States have been about equal to exports of uranium from the United States. The problem that the industry has today, not in the future but right now, with its low production level, is simply that the U.S. uranium industry produced 50 percent more uranium in the last decade than was actually needed by U.S. utilities.

Utilities bought most of that uranium expecting they were going to need it. They didn't need it. They built inventories instead. So when we say the problem today is largely a domestic problem, it was this failure to anticipate a smooth path for the nuclear industry.

If you were to completely ignore the entire rest of the world, the U.S. problem right now would be no different. I did try to make, I hope I was trying to make clear, that in the future, the discovery of low-cost reserves outside of the United States will affect the U.S. uranium industry. But if the rest of the world did not exist, the situation today would not be any different. In the future, it will be different.

Mr. Hall. What are foreign purchasers doing with the uranium they are taking delivery on? They don't all use it for short-term purposes. They store it, do they not?

Mr. Neff. Virtually everybody in the world holds inventories. Most of those shipments from the United States were associated with sales of U.S. reactors outside the United States.

Mr. Hall. To date. I am not sure if this is a per date figure. but if they subsidized their uranium industry in excess of $1 billion and they impose 100 percent de facto domestic content requirement and South Africa assigns a lot of its cost to gold production because they are mined together, then surely that is a foreign effect and that doesn't indicate to me that the problem is not of foreign origin. It indicates it's of foreign origin.

Mr. Neff. As I said, I was saying the problem to date has not been one of foreign origin. In the future it will be. Let me make a comment about that subsidy in Canada because I think that is a number which is the result of looking at the entire history of the Canadian uranium industry. I will point out that the United States essentially built the Canadian uranium industry prior to 1959. In 1959, the United States announced it would no longer buy from Canada. Between 1959 and 1966, when the United States imposed a total embargo on imports from Canada, Canadian output fell from 24 million pounds a year to 6 million pounds a year. The industry was kept alive much as the industry in the United States is asking today to be kept alive, by government intervention. They didn't want to see those communities shut down. They didn't want to see people go without jobs. They didn't want to see the collapse of the industry.

To this day, the Canadians, I think, blame the United States for that problem. Now, if you go back and you want to say the Canadians helped their industry in a time of trial and that was a subsidy that affects today, you can say that. I think, in historical perspective, it should be seen as the same kind of thing that is being asked for today. I think that is a problem with a lot of the issues that we are talking about here—that is, nobody anticipated these problems.

Mr. **Hall**. I think my time has expired. I recognize the gentleman from Utah.

Mr. **Nielson**. I would like each of the six to answer a question, yes or no: Do you believe congressional action is necessary to insure the viability of the domestic uranium industry?

Mr. **Hall**. You want one at a time or all at once?

Mr. **Farley**. Absolutely, yes, unless the DOE is going to act under 161(v), which they are obligated to do.

Mr. **Nielson**. Just yes or no.

Mr. **Selby**. Yes.

Mr. **Larson**. Yes.

Mr. **Friedman**. Yes.

Mr. **Nielson**. Don't complicate the matter with intelligence.

Mr. **Neff**. I feel terrible. I am the only academic up here.

Mr. **Hall**. Go ahead, Doctor.

Mr. **Neff**. No.

Mr. **Hancock**. Yes.

Mr. **Nielson**. Five out of six.

Dr. Neff, I think we are related. I have a grandmother by the name of Neff, Pennsylvania Dutch.

Mr. **Neff**. Yes.

Mr. **Nielson**. I am also an academician, a statician. I want to ask you a statistical question. You said we had a 50-percent overproduction during the period 1973 to 1981 and that is largely a reason for our problem. We, however, had 90-percent reduction in employment. How do those figures jibe? How does 50-percent overproduction cause a 90-percent drop in employment?

Mr. **Neff**. If you look at the statistics for the uranium industry in the United States, you will find in 1973 the average mine and mill worker produced 5,000 pounds of uranium, a little more than that actually. In 1979, peak production, the average employee produced 2,000 pounds of uranium. With the shrinkage in the industry down to the current employment level, which I think is 5,000 in mining, productivity is back up to 4,000 pounds per person. You can multiply that by whatever price uranium fetches today and calculate how you can run a business on that.

Mr. **Nielson**. I am still wondering how 50-percent overproduction in an 8-year period would cause 90-percent drop in unemployment.

Mr. **Neff**. You are looking at a 90-percent drop in employment during a very short period of time. Everybody could have gone home too. There is enough in utility inventories for 3 or 4 years minimum, 5 if you want to.

Mr. **Nielson**. Let me ask you a couple of questions, Dr. Neff. Are you familiar with—I am sure you are—Canada's policy of tying sales of uranium hexafluoride with sales of uranium oxide?

Mr. **Neff**. Yes, although there have been some agreements, as I understand it, to waive that policy in some cases.

Mr. **Nielson**. Are all of Canada's conversion services sold out of Canadian Government-owned plants?

Mr. **Neff**. Yes, although there is, as you are aware, a privatization move as well.

Mr. **Nielson**. Won't that affect us if we depend more on their imports?

Mr. **Neff**. My guess is the Government is going to privitize that entire industry.

Mr. **Nielson**. So it would threaten our tie-in if we increase our imports? The answer is yes?

Mr. **Neff**. Threaten the tie-in? I am sorry, I don't understand the question

Mr. **Nielson**. As our dependence on Canadian uranium increases, won't this tie-in threaten our conversion industry as well?

Mr. **Neff**. It may if they continue that policy.

Mr. **Nielson**. I made a statement earlier, which Mr. Farley also mentioned, prices paid by Canadian utilities for Canadian utilities are five or six times as high as the utilities sold in this country. Are you aware of that?

Mr. **Neff**. Yes, I have studied it.

Mr. **Nielson**. Do you consider that another basic subsidy for Canadian industry or subsidized by the electrical utility by paying five or six times what it sells for in this country?

Mr. **Neff**. I think you have to look at the historical reasons for that. Initially, Canadian industry was based on high-cost reserves in Ontario, much as the United States industry is based on high-cost reserves now. Ontario Hydro, Tokyo Electric Power, and others, made long-term contracts years ago when all that was known about in Canada was at very high prices which have escalated to $50 to $60 a pound.

Mr. **Nielson**. Are they required to pay $50 to $60 a pound there when they are selling in this country for $15; is that right?

Mr. **Neff**. Believe me, this is an area of internal contention by Ontario Hydro's board and the Federal Government and is an internal Canadian squabble of mammoth proportions.

Mr. **Nielson**. If I had to pay four or five times what you sell to the United States for, and twice what you pay to sell power to the United States, I would be very upset at both the Government and the uranium industry. You say that is a problem?

Mr. **Neff**. Yes, it is a problem, domestically. The utility would like to pay less but it's bound by contracts.

Mr. **Nielson**. How long will those take-or-pay contracts last?

Mr. **Neff**. They last out until almost the end of the century and beyond the end of the century for Tokyo Electric Power. If you would like to get a different interpretation of this, in effect what is happening is that Japanese and Canadian buyers of uranium are effectively subsidizing the consumption of uranium in the United States. If you want to put it that way, I think utility customers in the United States might think that was a good thing. Uranium producers would think it was a bad thing.

Mr. **Nielson**. You have been a consultant or adviser to DOE; is that correct?

Mr. **Neff**. No, I have not.

Mr. **Nielson**. You have not been. Did they support the research on your book?

Mr. **Neff**. They supported research over a period of I think about 5 or 6 years, up until about 3 years ago.

Mr. NIELSON. OK. Do you believe it is a good idea if the United States were to become 70 percent or 80 percent, 90 percent—whatever it is—dependent more on South Africa than Canada? Do you think it is a good policy?

Mr. NEFF. I don't think our dependence on South Africa is large enough to worry about. I don't think it is going to last that long.

Mr. NIELSON. Mr. Farley says it's 20 to 30 percent.

Mr. NEFF. Of U.S. imports, but U.S. imports are not that big. We have 20 percent of that. It is 5 percent.

Mr. NIELSON. All right. Is it good to be 70 percent dependent on imports piered from whatever source?

Mr. NEFF. I don't think that is good. I think there are other ways to deal with the security problem associated with that.

Mr. NIELSON. OK. Let me ask some of the other questions if I may.

Mr. Selby, should electric utilities of nuclear reactors share in the cost of cleaning up utility mill tailings?

Mr. SELBY. I don't believe they should. When electric utilities bought uranium it was as a commodity. There was no commitment in those contracts with the suppliers to provide for cleanup or whatever was final down the road. As far as I am concerned, the electric utilities paid for a product and a commodity, and that included all the costs associated with them.

Mr. NIELSON. Would you thoroughly disagree with Mr. David Berick who claims you should?

Mr. SELBY. Yes.

Mr. NIELSON. Anyone else? How do the rest of you feel about that? Mr. Larson?

Mr. FARLEY. I feel the utility should pay, of course, because at the time we entered into those contracts we didn't know, nobody really understood that radon in tailings was a potential health hazard, and it was not until 1978 when the first law was passed which said in effect we had to bear the total cost of that cleanup or stabilization, and it was not until 1983 that standards were enacted.

There was no allowance in any of our contracts even with private utilities for stabilization costs.

Mr. NIELSON. When you were mining most of your uranium, Mr. Farley, did you understand we would have to clean up afterwards?

Mr. FARLEY. No. We didn't understand that until 1978.

Mr. NIELSON. If it was a seller's market would you have used that in the price that they paid you?

Mr. FARLEY. Well, certainly.

Mr. NIELSON. It was $44 a pound, for example.

Mr. FARLEY. We would have thought about it as a cost we had to cover.

Mr. NIELSON. OK. Let me ask the same question I asked to Dr. Neff. What are the long-term implications of the industry if the current plight continues? You said there were three plants still going. There is a small one in Utah; one in—I don't know where the other two are. That one in Utah is Rio Algam, which is a Canadian subsidiary.

How long is Atlas going to stay in, for example?

Mr. **Farley**. Well, that is a question we are wrestling with right now, Congressman. There comes a time when you have to look at the annual cost of being on standby. In our particular case, it is costing us $3½ million a year just to maintain our mines and our mill in condition that would enable us to reactivate them.

If we really believe we are going to be down for 4 or 5 years, that gets to be a number which I don't think in all good conscience either the executive part of our company can recommend to our board to continue or our board will approve our continuing.

Mr. **Nielson**. We have a difference of opinion between Mr. Selby and Mr. Farley as to whether the electric utilities should pay for the cleaning up of the uranium mill tailings, but if we assume they should pay, how do you think the cost should be allocated between industry and Government? Certainly, the Federal Government may have led you down a primrose path before 1978. Maybe they should share in the cost. What should be the differentiation?

Mr. **Farley**. Well, we have tried in the bill that we have been talking about previously at the meeting, there is a 30-, 55-, 15-percent allocation as between the Federal Government and the utilities and us. In that case the 30 percent was chosen because of the total tailings, about 30 percent of those tailings were produced during the AEC buying program.

The balance, all of it, was produced for sale to nuclear utilities, but we felt that the producers should bear something of the balance so we recommend the allocation in the bill.

Mr. **Nielson**. Mr. Friedman, how do you feel about the allocation?

Mr. **Friedman**. Congressman Neilson, I really am not qualified to comment on that, as I indicated in the preface to my remarks.

Mr. **Nielson**. Mr. Larson, do you have a comment on this?

Mr. **Larson**. No, sir. I would like to say that in our type of uranium mining, I indicated state of the art. We didn't have any tailings, and I just don't have a comment on it.

Mr. **Nielson**. I think I have used my time, but may I ask this one question to Mr. Hancock?

Mr. **Hall**. I will grant you another 12 minutes if you wish.

Mr. **Nielson**. It won't take that long.

Mr. **Hall**. Go ahead. I have a question or two to ask, and then we will wind up.

Mr. **Nielson**. Mr. Hancock, what do you think should be done? Should we subsidize or should we have the DOE put some import quotas on? If you had your choice of those two, which one would you pick, and if you don't like either of those, give me another alternative.

Mr. **Hancock**. If I had my choice, I would put some quotas on imports.

Mr. **Nielson**. I would, too. How do the rest of you feel?

Mr. **Selby**. I would like to comment on that. Chairman Markey asked a question about placing an embargo or restriction on imported uranium, and what price increase that might result from that would do to the cost of electricity.

I made a back-of-an-envelope calculation. Actually it is on the back of my testimony here. But if you look at the cost of a kilowatt hour, about 20 percent of it comes from the fuel. About 30 percent of the cost of the fuel is the cost of the yellow cake which is the output of the uranium mining and milling industry.

If 15 percent of the total electricity sold in this country is nuclear, and let's assume we double the price of the yellow cake, $15 to $30, then since we only refuel a reactor about 20 percent, 25 percent annually, in 4 years the effect on the price of a kilowatt hour would go up about 1 percent.

I submit that would hardly be found due to the effects of inflation.

Mr. NIELSON. Congressman Lujan said it would be about $5 a year.

Mr. SELBY. I think it would be the same, $400 a year approximate average residential bill, 1 percent would be $5, $4.

Mr. NIELSON. Theoretically, if you pass the acid rain bill in the Health and Environmental Subcommittee, the average cost would be $25 per month per family for the entire country—would take care of that problem which might help the State of Massachusetts.

Mr. SELBY. It didn't pass.

Mr. NIELSON. If I may clarify one thing for the record just for that, is that based —would that increase be based on all electric consumers or just those consumers who got their power from nuclear?

Mr. SELBY. That is all electric consumers, a national kind of effect.

Mr. NIELSON. Do you have a similar calculation figured on rate payors that got their power from nuclear powerplants?

Mr. SELBY. If a rate payor got all their power from nuclear power, the effect would be about 5 or 6 percent, but I don't think there are any rate payors that get all of it from nuclear power.

Mr. HALL. Had the gentleman from Utah completed?

Mr. NIELSON. Yes.

Mr. HALL. Just as a practical matter, I am out of the aluminum industry and alumnum reduction facilities, when you find tailings, we find still some benefit from them, and from coal tailings and others.

Is there anything to be recaptured from the tailings that you are testifying about here? Is there any ingredients?

Mr. FARLEY. Not very much. In our billing operation, we recycle it back into the mill.

Mr. HALL. On fuel control they recycled it and reused it.

Mr. FARLEY. The tailing content is so low in U^{308}, it wouldn't be very economical to set up some kind of special plan.

Mr. HALL. That was my question whether it would be economical.

Mr. FARLEY. No.

Mr. HALL. So it ought to go all out to protect the environment, and is something that has to be done.

Mr. SELBY. There may be other metals in the ore such as vanadium, but most operations take that out as part of taking out the uranium.

Mr. HALL. We can continue to look because up until 1978 we didn't know we would ever look back over our shoulder at them again. So one other thing, I remember an old country storekeeper that said if your outing exceeds your input, your upkeep is going to be your downfall.

I won't ask what effect the depressed uranium market has on small business, but I will ask Mr. Larson—I know yours is a small business with a—when you go to refinance or in this domestic market, as depressed as it is, how does an independent producer—and you do battle with the big boys. How do you raise capital?

Mr. LARSON. First of all, I polish my mirors before I go to work in the morning. What you have to do is truly be creative. We are not capable of being bankable on a conventional basis.

Mr. HALL. How do you stay in business during these times with the depression as it has been testified to here by everyone?

Mr. LARSON. Congressman, what we do is we have good assets. You go through what I hate to call an orderly liquidation. You start by selling off assets. We have also been fortunate. We have done some other things such as we have sold options. Now, generally, when we are selling assets—these options are options to produce uranium at a later date. We are generating cash now.

We are diluting future earnings. We are diluting existing assets to raise capital to maintain fully integrated viable company in the hope that before we run out of this "orderly liquidation," that the market will justify initial capital investment.

Mr. HALL. That is on the stockpiling of Dr. Neff alluded to. You are giving up your——

Mr. LARSON. No, sir. We are not producing at this point in time. We have a company of 30 full-time employees. We are not in production. We are in restoration. We continue to search for new and viable assets. We recently were fortunate we found one. We do go offshore. It is very, very difficult to find anyone in the United States that will finance a uranium producer.

If you go to Europe, if you go to Taiwan, Japan, Korea, other countries, they have a longer term interest, and that is where we find our financing if we can find it.

Mr. HALL. Foreign purchasers. What are they doing with the uranium that they are taking delivery on now?

Mr. LARSON. What they do, they take theirs in kind. In Europe particularly we are more familiar. They are highly reliant upon uranium and France is 60 percent electricity, West Germany is 30 percent. Sweden is over 50 percent.

They are long-term oriented. They look at the world market and most of them, excepting for France have very little uranium. But they are committed.

Mr. HALL. So they are stockpiling is what you are saying.

Mr. LARSON. They are stockpiling to some extent, but they are stockpiling reserves in the ground as well. If they can come to the United States and acquire leases with uranium on them which CEGB, the Central Electric Generation Board in England recently did, in Wyoming, with the idea that they would not produce those until 1995 or beyond.

That is what they are doing because they look at the rest of the world, Canada, Australia, the African nations and the United States and they ask themselves, "We don't have uranium. Where is the most reliable source?" And that, of course, is the United States. We are always looked at as the most reliable source. So they are coming and literally picking up reserves here very quietly, but they are certainly getting them.

Mr. **Hall**. I don't mean to speak unkindly about Canada. It is a matter of record as to their trade imbalance with us. They are our neighbor, and our very good neighbor, and I guess I ought to feel good knowing that we have one, the availability there even if we don't like the way they dispense it.

With the deterioration domestically, say we would shut off income of uranium from Canada, South Africa. With the plants down and there has been testimony as to what you are doing to try to keep them alive and restorable, how long would it take us to gear up again if we would say, "OK, the ball is in your court?" Couldn't possibly serve us for a certain length of time. What would be that length of time?

Mr. **Larson**. I can't speak for the conventional miners. There are, as I understand, a good number of mines who have the operators have elected to let them flood. I do not know the economics of that.

Mr. **Hall**. Does anybody here have a suggestion on that?

Mr. **Farley**. The longer you stay down the longer it is going to take to get back. In our particular case, we went down a year ago April, and we estimate under certain expenditures, scenarios, we could be back in production in 6 to 8 weeks.

We have not let our mines flood or anything like that. Once we do that, anybody who is letting their mines flood is probably not going to come back to the industry at all.

Mr. **Larson**. We have two properties that could be in commercial production approaching a half million pounds a year, each within 18 months to 2 years.

Mr. **Hall**. Well, it's my experience in the industry I came out of, if we let a pressing down and it deteriorates, it takes some time. And then it takes time to load that press with business and to build up peoplewise.

Mr. Hancock, how long would it be—there may not be an answer to this. How long would it be if we said the ball is in your court now; go to gearing up, until you could produce somewhat competitively? Dr. Neff?

Mr. **Neff**. I have two observations on that.

One is I think the best properties will probably be preserved for some time. I think it is going to be necessary anyway because of the large inventories that exist. The real question is out in the early 1990's, and if there is really a market there, I believe the U.S. industry can be competitive and provide 40 to 50 percent of U.S. needs in the market of the 1990's.

There is a little bridge problem of getting there, and I think the people with reserves are going to take care of them, and are probably going to do OK. The other question was what? I'm sorry. The second question?

Mr. **Hall**. I think you have answered my question. I gather it to be in the early 1990's we could further 40 to 50 percent of the domestic need.

Mr. **Neff**. I think I am probably more optimistic about the long term than people may have thought.

Mr. **Hall**. I like that observation.

Mr. **Selby**. I would agree with that. If the price is there and the production is there, they could produce quite rapidly.

Mr. **Farley**. If the price were $25 a pound, one or two producers now down might be induced to seriously consider returning. At a price of $30 perhaps a few others, but in my judgment it will take a price at least $40 for any new real capital investment, any new properties.

Mr. **Hall**. The price today is?

Mr. **Farley**. Sixteen.

Mr. **Hall**. So we have got the problem of as we gear up we will be paying more, and it is when we can reach the point to where we come close to the 16 or 20 or whatever the proper price ought to be, but it can be done.

Dr. Neff?

Mr. **Neff**. One observation was in the panic of the 1970's. U.S. production did not vary a a great deal partly because of maintenance programs in the United States by the Government. Outside the United States, the industry went to hell in the sixties. During the 1970's it doubled production, a huge increase in production, more than doubled it in 4 years.

I think there is a great deal of capability there if there is incentive to use it.

Mr. **Farley**. That was a function of price, and we don't have that now, so I question that we would come back very fast, plus the fact that a lot of the players who came into the industry are gone forever, in my judgment, the big players.

Mr. **Hall**. That is part of the tragedy. I thank you very much. I think between you, Dr. Neff, and Professor Neilson, here, that we have had a scholarly discussion. And I hope I brought out some of the practical aspects.

Mr. Friedman, you have one statement you wish to make?

Mr. **Friedman**. If I might, in the absence of Chairman Markey, he did pose a question earlier today which I thought the record of the hearing might bear. And that was he asked the question that is partially related to one you asked, Mr. Hancock, and that is, if there was a coordinated policy on the U.S. side of the border with respect to managing or restricting imports of one kind or another, Chairman Markey was concerned about whether that would have a negative impact on the flow of imported electricity into his region of the country which he felt benefited consumers in his area.

I wanted to respond to that, and I think in his absence he may want to have that in the record.

Mr. **Hall**. I think Congressman Markey would like to have that on the record.

Mr. **Friedman**. In my view, at least having been closely involved in this, the incentives to the Canadians for the export of that power into all parts of the country, but particularly into New England are so great in terms of, first of all, the profitability of that trade to them, and second, the excess capacity which the Canadians now have in their industry, that there is very little likelihood that such an action on our part would lead to any kind of restriction on their exports.

They need to sell that power in the United States to service the debt on those huge facilities that they have already built, so there is no danger, in my judgment, to Congressman Markey and his constituents, including the gentleman on my left here.

Mr. SELBY. I would like to second that. We deal with Ontario Hydro on a day-by-day basis in Michigan spending back and forth. They have the energy, and the market is to the south of them.

Mr. HALL. I am sure it will make Mr. Markey feel better when he reads this record.

Mr. FARLEY. The very things we are recommending to be done here to save us are being done already in Canada for their industry. So as to retaliation there, they can't retaliate any further. They already have.

Mr. HALL. Mr. Selby, might I ask you one question? If I have a question I want to propound to you later in writing to go into the record, and if there is no objection, wouid you answer me in writing?

Mr. SELBY. Surely.

Mr. HALL. I do thank you. Thank you, gentlemen. It has been a very good panel.

[Whereupon, at 5 p.m., the subcommittee was adjourned.]

[The following statements and letter were received:]

A STATEMENT BY
THE HONORABLE TONEY ANAYA, GOVERNOR
STATE OF NEW MEXICO

Mr. Chairman and Members of the Subcommittee, I am Toney Anaya, Governor of the State of New Mexico. I thank you for this opportunity to discuss my concerns and suggestions regarding the serious plight facing the American uranium industry and to have these matters placed into the October 8, 1985 hearing record. I regret that scheduling conflicts prevented me from personally addressing the subcommittee at the October 8, 1985 hearing.

The uranium industry is in serious trouble in New Mexico and throughout the United States. The uranium industry as we know it is dying. This is the long of it and the short of it. The State of New Mexico has tried over and over again to get the U.S. Department of Energy to hear the death knoll of the uranium industry. The DOE has been very hard of hearing, but finally something has gotten their attention for they have begrudgingly admitted that the uranium industry was not viable in 1984. I only fear that this small concession to reality by DOE may have come too late and may itself offer too little support for any significant relief.

While the DOE's admission of non-viability has been made, I am worried by the lack of any clear commitment to further decisive action, for the record shows that the Reagan Administration has failed to assist this critical and strategic industry. The non-viability announcement means little in theory and even less in practice given the Administration's historic footdragging on uranium issues. Mr. Chairman, I wish it were different, but as Governor of the State that has traditionally been the number one producer of uranium, I am forced to say that I have not received one positive indication from industry that this non-viability announcement will impact their future plans and reverse their negative trends. The finding and announcement by DOE is no panacea or guarantee the industry will reopen a single mine or mill. The announcement does not insure that thousands of honest, hard-working people will have the opportunity to return to their jobs or that the communities so heavily impacted by this industry's demise will soon be restored to economic vitality. The non-viability determination by the DOE only provides an opportunity and is but a first step in the right direction.

Mr. Chairman, it has taken years for the DOE to admit that the uranium industry in the United States is no longer viable——how long will it take them to do something about it? I feel that, left to their own devices, the Reagan Administration will not do a constructive thing for years. Does this industry have years under current circumstances? I don't think so.

Mr. Chairman, I am not sure the Reagan Administration is ready, willing or able to deal with the problems facing the uranium mining and milling industry. Therefore, I feel that Congress should take this non-viability ruling by DOE and use it to support legislation to foster stable, long-range programs designed to assist the domestic uranium mining industry. I feel the Congress can best serve the uranium industry, for the President has made it pretty clear that he is not going to listen to the people of this country when they call for effective revisions to our trade policies. I think tnat the Congress is far more in tune with the wants, needs and desires of the American people and American industry when it comes to planning for and building a healthy economy today, and in the 1990's.

I would like to take this opportunity to ask you and your colleagues to design legislation authorizing and directing the U.S. Nuclear Regulatory Commission to impose restrictions on import licenses for natural and enriched uranium to the extent necessary to ensure that the United States uranium industry supplies a substantial portion of our domestic requirements.

As the head of an Executive Branch of government I recognize that my petition to you is out of the ordinary. One could easily say that the power and the authority for addressing the problems of the domestic uranium industry are vested in the Executive Branch of the Federal Government. One would be correct in so saying---however I feel that I am correct when I say there is no desire by the Federal Executive to acknowledge and address the problems of the domestic uranium industry; their inactions, in the name of free trade, lead one to truly believe that they would allow this great Nation to become woefully dependent upon the supplies of foreign producers. The only organization that can force the President to see the problem in its proper perspective is the Congress, and I ask that you do what is necessary to insure the future stability of the domestic uranium industry and the future stability of uranium supplies to our domestic electric utilities.

I have specifically asked that the Nuclear Regulatory Commission be given the authority to restrict imports rather than seeking legislative direction for the Department of Energy. The reason for this is that quite simply I feel that the DOE and its predecessor agencies have been the main cause of the domestic uranium industry's problems. It was the Atomic Energy Commission (AEC) that set the original price for uranium. It was the AEC that created the first boom and the first bust for the industry in the 1950's and 1960's. The most recent boom-bust cycle can be traced directly to the actions of the DOE and the Energy Research and Development Administration. Let's not have the people that caused the problems address them——especially if their boss doesn't want them to address the problems.

My call for NRC involvement is further hastened by the recent court order declaring the Department of Energy's new utilities services contract for uranium enrichment "null and void." The court found that the DOE failed to comply with provisions in both the Administrative Procedures Act and the Atomic Energy Act. The Atomic Energy Act requires DOE to establish written criteria for providing enrichment services and states the criteria cannot be changed until they have been submitted to Congress. The court found that the new utilities services contract, which had not been submitted to Congress, conflicted with, or contained provisions not authorized by, the written criteria adopted in 1979.

Mr. Chairman I would like you to know that my position is not solely based upon socioeconomics or frustration with the current Administration. New Mexico and several other states have a tremendous challenge waiting for them in the area of uranium mill tailings clean-up. The vast majority of our tailings are found on Federal lands that have been taken to patent under the Mining Law of 1872. These mill tailings pose a threat to our environment and to the health and safety of the people living in close proximity. Mr. Chairman, we need to have a viable uranium industry so it can work with the states, the federal government and maybe even the utilities to meet the challenges of reclamation. If the domestic uranium industry ceases to exist, the burden of mitigating mill tailings problems will fall that much more severely on the public.

In conclusion I say that the issues and problems facing the domestic uranium industry are complex and have long-range consequences. The current Administration has established a record of simplistic approaches and solutions that address only the short-range consequences. The people of New Mexico and of the Nation need the assistance of Congress to insure that our long-term supplies of uranium are assured; that the long-term future of the uranium industry actually exists; and that the long-term environmental challenges are met and properly addressed.

Thank you.

ENVIRONMENTAL POLICY INSTITUTE

STATEMENT OF DAVID BERICK
DIRECTOR, NUCLEAR WASTE & SAFETY PROJECT
ENVIRONMENTAL POLICY INSTITUTE

BEFORE

ENERGY CONSERVATION & POWER SUBCOMMITTEE
HOUSE ENERGY & COMMERCE COMMITTEE

CONCERNING

URANIUM MILL TAILINGS RECLAMATION REQUIREMENTS

OCTOBER 8, 1985

On behalf of the Environmental Policy Institute, I want to thank Chairman Markey and the members of the Subcommittee for the opportunity to testify on the status of uranium mill tailings reclamation and proposals, including H.R. 2236 "The Uranium Mill Tailings Reclamation Act", to have taxpayers and ratepayers finance uranium mill tailings reclamation.

We stongly oppose H.R. 2236, and similar proposals, to transfer responsibility for uranium mill decommissioning and uranium mill tailings disposal to the Federal Government. This transfer will not result in more timely reclamation over the current requirements and is likely to obstruct it. It will result in a deterioration of tailings management as a condition of operation further impeding tailings clean-up. Thirdly, it will reward the uranium industry's chronic obstruction of Federal and State uranium mill tailings clean-up requirements with a financial windfall of hundreds of millions of dollars.

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MILL CLEAN-UP FINANCING MECHANISM NOW EXISTS

Mr. Chairman, in 1978, Congress considered and explicitly rejected the extension of taxpayer subsidization of clean-up costs to existing mills as now proposed. Contrary to the "Findings and Purpose" of the proposed legislation, it is our view that the 1978 Act did create a comprehensive method for financing reclamation of mill sites. First the Act clearly established that uranium mill tailings were a material regulated under the Atomic Energy Act and would be regulated as a part of uranium mill regulation, a change from preexisting authority under RCRA. Second, the Act required all mill licenses to contain such terms and conditions as necessary to assure that reclamation was completed prior to termination. Third, the Sec. 203 of the Act required the NRC to ensure that

> "...adequate bond, surety, or other financial arrangement (as determined by the Commission) will be provided, before termination of any license for byproduct material, as defined in section 11(e)(2), by a licensee to permit the completion of all requirements established by the Commission for the decontamination, decommissioning, and reclamation of sites, structures, and equipment used in conjunction with byproduct...."

In exchange for this delegation of responsibility for existing mills, the 1978 Act instituted a 100% taxpayer-funded remedial program to clean-up the so-called inactive mill sites. At the time, these costs were estimated to be less than $200 million. DOE's current cost estimates show total Title I clean-up costs of slightly less than $700 million; a not inconsiderable alleviation of financial responsibility.

THE NEED FOR TIMELY RECLMATION

We agree with some of those, such Rep. Richardson, who in supporting H.R. 2336, argue that we ought to get on with mill site reclamation, although this is a new argument for many. The uranium industry, for instance, has steadfastly resisted the implementation of Title II of the UMTRCA, which underpins both Federal and State tailings reclamation requirements, at every turn.

There is, however, nothing inherent in a federal clean-up program that would make it more likely to achieve rapid reclamation than the current system. In fact there are elements of a federal clean-up program, as demonstrated by the DOE Uranium Mill Tailings Remedial Program under UMTRCA, that would argue against a federal program. Almost seven years after enactment of UMTRCA, reclamation is being completed at only a single remedial program site. Of the top nine "high priority" sites, clean up of the actual mill site will have begun at only four by the end of this fiscal year.

If the proposed legislation were enacted, DOE would have to establish a new program to manage the new "existing site" reclamation including financial, administrative, contracting operations based upon the complicated new funding mechanism. At the mill sites, DOE would also have to recreate site specific reclamation programs from the ground up, beginning with hiring contractors to survey the sites before it can progress with clean-up. DOE would be required to reconstruct a great deal of the on-site management, including quality control, environmental and occupational regulation, as well as physical construction capability at the sites. In testimony earlier this year, DOE attributed a 30 to 40% increase for the cost of federal reclamation over the current program.

DOE would also be constrained by a funding and budget process in conducting its activities because, and inspite of, the establishment of the proposed mill tailings fund. Unlike the current system with multiple financing arrangements tied to individual sites, the proposed "existing site" reclamation would be dependent upon the funding and pricrities of a single federal program. Simply put, DOE would have to establish priorities of clean-up based upon available funding. Work could not begin on all sites at once, or even when operations at a particular site ceased. It might be many years before reclamation began at a given site.

A look at the Title I program and the proposed funding levels in the proposed legislation suggest lengthy delays in reclamation. The 0.15 mil/kwh fee would generate roughly $60 million in FY '86($64 million for the calender year) increasing to $83.7 million in FY 1990($87 million for the calender year). If this level represents 55% of the annual program budget, the program budget would be roughly $109.3 million in FY '86 and $152.2 million in FY '90.

By comparison the FY '86 request for DOE's Title I remedial program is $110 million, roughly equal to projected annual budget for the proposed "existing sites" program. While the level of work in the Title I program is moving into the construction stage, the Title I program has only 15% of the amount of tailings to handle as the proposed program which suggests a rather drawn out reclamation schedule for the proposed program funding level.

There is no sound estimate of decommissioning and reclamation costs for existing mills. DOE estimates that program costs are could run over $4 billion or an average of $22.34/ton. Current industry surety arrangements, one measure of costs if one assumes that such arrangements accurately reflect regulatory requirements, constitute a low-range estimate of $263 million. This low-range estimate is far too low because none of the mill surety requirements would meet current EPA standards. Actual operator cost under the current program lies somewhere in between, perhaps closer to the TVA/Edgemont reclamation costs of $8.56 or a rough cost of $1.7 billion.

While we have no reason to doubt DOE's estimate for its compliance with the proposed legislation, it is important to understand the cost differences between a DOE and an operator financed program. Even if we assume that the DOE estimates are too high, the 0.15 mil/kwh fee will generate less revenue than the utility 55% share of a lower $1.7 billion cost over the next ten years and far less than 25% of the DOE estimate. In either case, there is an obvious likelihood of a major stretchout of the program because of funding.

Likely delays, possibly lengthy ones, between cessation of operation and the onset of reclamation by DOE raises a number of problems and might contribute to increases in the amount of reclamation required. For example, windblown tailings from dried out impoundments could increase the amount of contaminated area requiring clean-up. Delays might also result in the need to reestablish basic services, such as utilities or water supplies, at individual sites further complicating clean-up.

While there is a clear interest on the part of the sponsors of the legislation to limit the economic disruption in communities dependent on mills now being shutdown through initiation of reclamation, it is likely that the proposal will have the opposite effect since it will result in delays between cessation of operation and reclamation at many if not all sites that could be minimized under the current regulatory system which can require prompt reclamation.

SOLVING OR EXACERBATING REGULATORY PROBLEMS?

Far from unraveling the regulatory problems arising from UMTRCA, the proposed exemption from all legal or regulatory responsible for mill site reclamation beyond remuneration of 15% of costs would create a regulatory twilight zone which UMTRCA sought to avoid. For example, it is questionable if mill licenses could require conditions for tailings management which would facilitate final disposal or site reclamation in the absence of operator responsibility for those functions. Could licensees be required to prevent off-site releases, such as groundwater contamination, which would be known to occur after the site was turned over to DOE? Could interim stabilization or controls be required until DOE physically began reclamation as part of operating license requirements. The language of proposed legislation which limits operator financial obligations suggests that the answer to all of these questions is no.

Under what regulatory framework would DOE conduct the clean-up? The language of the proposed legislation transferring licenses and applying UMTRCA regulation also raises more questions than it answers. Both DOE and NRC, in response to questions from Interior Committee Chairman Udall, suggested that this language would be interpreted to transfer regulatory authority from Agreement States to NRC and would likely invalidate any agreement state license conditions. NRC also suggested that transfer of NRC licenses would not necessarily preserve the original license conditions.

It is clear that before any mills could cease operation, within the terms of the proposed legislation, NRC, DOE, EPA, and the Agreement States would have to conduct rulemakings to clarify the conditions for cessation and transfer of the sites to DOE. Subseqently, NRC and the Agreement States would have to revise the individual licenses upon completion of those rulemakings which would further delay the desired reclamation. If there is regulatory uncertainty today concerning the obligations of mill operators for license termination, especially for timely reclamation, it will only be compounded by enactment of an entirely new scheme and with predictable delays.

EQUITY OR SUBSIDY?

Unlike the 1978 Act, which directed taxpayer funding to a set of tailings sites meeting specific conditions of federal contracts and regulatory status, the proposed legislation would create a blanket subsidization of reclamation of all mill sites regardless of their respective circumstances or qualification. Even if the Federal Government has an obligation to pay for commingled tailings generated in fulfillment of government contracts, which I do not concede, why should taxpayers pay thirty percent of the costs of tailings and mill reclamation at the 13 of 28 mills covered by the proposed legislation that did not produce any uranium for the government? These thirteen mills constitute roughly 21% of the total tailings covered by the proposed legislation.

If the principle that the proposed legislation is based upon is that the Federal Government is responsible for commingled tailings, as provided in the 1978 Act, than that responsibility should be established on a case-by-case basis with commingled tailings disposal costs directly proportional to the costs of reclamation of the particular mill which would range as high as 77%. We remind the Subcommittee that the 1978 Act required a case-by-case assessment of responsibility and liability for tailings clean-up by the Attorney General under Sec. 115. To date only one such assessment has been completed; for the Cannonsburg site. We find it troubling that after seven years the Justice Department has not completed this task, and equally troubling that some would claim that the principle of full federal responsibility for commingled tailings has been established in the absence of full compliance by the Justice Department with Sec. 115.

As for the ratepayer share, the mill tailings fund outwardly mimics the fund created for the high-level waste program in the Nuclear Waste Policy Act, but it is completely contrary in its adherence to the high-level waste fund principle that ratepayers and utilities pay fees reflective of their own waste disposal costs.

Under the high-level fund, the mil/kwh fee is a fee on current users of electricity to pay for the costs associated with the waste generated by that current usage. Wastes already produced, analogous to the entire proposed mill tailings clean-up, are apportioned on a one-time basis directly according to the amount of spent fuel each utility produced prior to the on-set of the fee.

Whereas utilities and consumers pay proportionately to the amount of high-level waste for which they actually are responsible, under the proposed mill tailings fund, ratepayers and utilities shares bear no correlation to the amount of waste individual ratepayers or utilities might be construed to be responsible for generating. Further unlike the high-level fund where utilities are the generators and have direct responsibility for generation of waste, the tailings fund holds all utilities responsible for all existing tailings whether or not there was any direct contractual relationship. This is also a major departure from the principle involved in the federal share, as proposed or in Title I of UMTRCA, where there was at least a *prima facie* contractual link between subsidization and uranium purchase. In short. the equity of apportioning waste disposal costs in the high-level fund is entirely absent from the mill tailings funding scheme.

IS FEDERAL INTERVENTION NEEDED TO ASSURE RECLAMATION?

It has been argued that regardless of the history of regulatory obstruction, the history of the 1978 Act and subsequent amendments, and other matters of record, the uranium industry is facing hard economic times and a federal clean-up program is the only way in which the existing mill sites will be cleaned up.

These arguments imply that the uranium producers will default on their surety arrangements, will merely cease to be viable commercial entities and/or will willingly violate license termination requirements made upon them by the NRC and/or state regulatory agencies.

We agree that this is a serious potential problem especially in light of the likelihood that neither NRC nor Agreement State surety arrangements are adequate to cover reclamation costs. In some cases, although we know of no evidence that has been presented to the appropriate regulatory agencies, a mill owner may not be capable of meeting disposal requirements. This will be a serious problem, but not one which requires the Congress to act now, before a single company has defaulted, to restructure the legal responsibilities of the entire industry. Contingency planning, yes. Restructuring no.

There is diversity within the uranium industry in terms of the financial health of the uranium companies and their parent corporations. It is important to note, however, that some of these companies, Union Carbide, Exxon, and Texaco for example, have assets in excess of $10 billion and according to the GAO have pledged those assets as surety against their clean-up costs. Hard times for the uranium industry does not translate into an inability of mining companies or their parent corporations to pay for clean-up across the board.

Should significant environmental or public health and safety hazards from defaults become apparent, Congress could then act to incorporate such site into the Federal Government's existing remedial program under UMTRCA or EPA could probably act under Superfund. EPA, as suggested in a recent U.S. Court of Appeals decision(Eagle-Picher Industries v. EPA) and in which the State of New Mexico intervened, may already have authority in some cases to address mill reclamation under Superfund. In this case, the court upheld the listing of two active uranium mill sites on EPA's Superfund National Priority List. As a contingency, changes could be made in law now, such as by explicitly including uranium mill sites whose owners have defaulted on reclamation requirements in Superfund. It is worth noting here that the Senate recently adopted amendments to Superfund that may ultimately block access to Superfund for uranium mill sites and which should be reviewed by the House in the context of its decisions here regarding Federal policies for uranium sites.

When federal intervention is necessary, as it was in the case of many of the Title I UMTRCA sites, we will support that intervention to protect public health and safety and the environment. The proposed legislation makes federal intervention a policy for an entire industry even where no specific justification has been demonstrated. In the absence of evidence that a substantial number of uranium mill licensees have or will default on their surety arrangements or that they will be financially unable to comply with final license termination requirements, the proposed legislation is a best premature and at worst an unwarranted financial windfall.

CONCLUSION

The 1978 UMTRCA balanced a number of basic principles all aimed at minimizing the environmental hazard from uranium mill tailings. Inactive sites would be cleaned up by the taxpayers, but all existing sites would be the responsibility of the corporations running them. Whereas inactive site clean-up was financed entirely by taxpayers, Sec. 115 provided for the Attorney General to study the potential liability of individual site owners and take such as action was in the public interest to recover costs from hold those site owners responsible. Despite the apparent inability of the Justice Department to take this charge seriously, Sec. 115 at least preserved the principle of holding mill operators responsible for environmental hazards despite federal intervention.

Also under UMTRCA, reclamation of existing sites was the financial responsibility of the licensees, but the long-term hazard represented by mill tailings argued for the transfer of permanent tailings disposal sites to governmental custody thereby limiting licensee responsibility.

This is not to say that all is well under UMTRCA. For example, NRC has inexcusably delayed its conformance with EPA's final Title II standards for 18 months and proposes to delay final adoption of groundwater requirements for several more years. In another example, information submitted to Interior Committee Chairman Udall by GAO and NRC shows that NRC and Agreement States have failed to bring mill surety requirements up to the level needed to assure reclamation. Despite the fact that

NRC regulations have required that groundwater be restored to current use or potential use quality since October 1980, NRC has not required surety arrangements to address this requirement. NRC has also allowed Agreement States to continue self-insurance surety arrangements when NRC has deemed such arrangements inadequate. The need for drastic changes in the level of surety requirements was confirmed before NRC hearing on implementation of the EPA regulations last month by the State of New Mexico.

We urge the Subcommittee to investigate these regulatory failures at NRC.

Although the experience of the last seven years would argue strongly against it, we are willing to the discuss of how to make sure that the UMTRCA program results in timely and adequate reclamation. The uranium industry has resisted the establishment of the required NRC and EPA regulations for both the UMTRCA Title I remedial program(which do not apply to a single operating mill) and Title II standards in the Congress and in the Federal courts virtually since the day UMTRCA was signed into law. A similar campaign has been waged at the state level and uranium producers have appealed even the most preliminary groundwater monitoring requirements ordered by the U.S. NRC to begin the process of implementation of the final EPA requirements. As recently as last month, after the Tenth Circuit Court of Appeals upheld the legality of the EPA's final uranium mill tailings regulations, the uranium industry appeared at a special meeting it requested before the NRC to urge the NRC to indefinitely delay that agency's implementation of the EPA standards.

I reiterate that we accept Rep. Richardson's and Governor

Anaya's sincere efforts, in supporting this legislation, to assure that uranium mill tailings and mills are cleaned up in a timely manner, but support for this enterprise from the uranium industry has a decidedly hollow ring.

Despite these grievances, we are willing to discuss the specific problems of specific mill sites in meeting the requirements of UMTRCA. We are willing to discuss a process for establishing, on a case-by-case basis, whether the Federal Government should reimburse operators for commingled tailings because of prior contractual commitments, although it is now clear that this will require a more stringent review than provided in Sec. 115 of UMTRCA. We are willing to discuss establishing contingency plans in case individual mill operators default on their license or surety commitments. If there is a need to provide some sort of guaranteed loan or other cash flow mechanism to allow operators to meet their reclamation obligations, we are also willing to discuss such proposals.

What we do not believe can be debated, however, is the dismantlement of Title II of UMTRCA and the blanket transfer of responsibility for mill site reclamation from mill operators to the Federal Government as proposed in H.R. 2336.

Thank you again for the opportunity to testify.

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DIVISION
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[illegible]

TONEY ANAYA
GOVERNOR

DENISE D. FORT
DIRECTOR

STATEMENT

OF

DENISE D. FORT

DIRECTOR

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION

CONCERNING

URANIUM MILL TAILINGS REGULATIONS

BEFORE THE

U. S. NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C.

September 10, 1985

EQUAL OPPORTUNITY EMPLOYER

Mr. Chairman and Members of the Nuclear Regulatory Commission: I am Denise Fort, Director of the New Mexico Environmental Improvement Division (N.M. EID). I appreciate this opportunity to present the State of New Mexico's views on the subject of uranium mill tailings regulation. We have discussed this subject with the other three Agreement States for uranium mill licensing (the States of Colorado, Texas, and Washington), and all support quick action by the NRC to promulgate final regulations for tailings disposal.

Uranium mill tailings are of great concern to New Mexico. There are presently about 84 million tons of tailings at five licensed uranium mills in the state. These tailings comprise some 45% of all tailings at "active" uranium mill sites in the United States, as defined in the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA).

We do not concur with the contention that uranium mill tailings are no more hazardous than ordinary, non-radioactive mine wastes. The many health and environmental concerns include both radiological and non-radiological components. The tailings will remain radioactive for many thousands of years, with all nuclides of the uranium decay series (except uranium) present at about the same activity as originally in the ore. The milling and leaching process changes the material both physically and chemically to greatly increase the potential for spread of chemical and radiological contamination outside the tailings disposal site.

Existing and past problems at New Mexico tailings sites demonstrate the need for isolation and stabilization of uranium mill tailings materials. All five "active" mill tailings sites have ground water contamination problems that have necessitated remedial or preventive measures. Two of these sites have been placed on the National Priorities List under the Superfund Program because of the ground water contamination problems. Major tailings dam failures have occurred at these same two facilities, and in one case caused contamination of more than 70 miles of river (including areas in the adjacent State of Arizona). Blowing tailings material has been observed at each of the "active" sites in New Mexico.

The State of New Mexico supports the incorporation by the Nuclear Regulatory Commission (NRC) of the Environmental Protection Agency (EPA) general environmental standards into NRC requirements for uranium mill licensing. The N.M. EID has independently conducted legal research into the question of whether the EPA standards for "active" tailings sites are now legally in effect and must be enforced against licensees of NRC and the Agreement States. We concur with NRC counsel that under 42 U.S.C. Sec. 2022(d), NRC and the Agreement States have both the power and duty to enforce EPA's "active" site standards, at least to the extent thus far prescribed in NRC memoranda to the Agreement States. However, the uranium industry is vigorously resisting the implementation of the EPA standards in this fashion, and we urge the Commission to move as quickly as possible to adopt the EPA standards into the NRC regulations.

As discussed further below, the present state of the uranium industry and the existing financial sureties for tailings reclamation by both NRC and Agreement State licensees create an urgency that did not exist only a few years ago. The closures of most of the uranium mills in New Mexico and throughout the United States have made it critical that both industry and the responsible regulatory agencies know where they stand with respect to final reclamation and ground water protection requirements.

The N.M. EID supports the EPA general standards for uranium mill tailings as being necessary to protect human health and the environment, and generally adequate. The standards appear to be a reasonable compromise between the very lax requirements advocated by the uranium industry, and the even more restrictive requirements originally promulgated by the NRC in 1980. Whether we agree with the EPA standards or not, however, the N.M. EID believes that Congress has clearly expressed its intention that, with certain limited exceptions, the generally applicable EPA standards shall be adopted and enforced by NRC and the Agreement States. Therefore, the Commission is not at liberty to substitute its own judgment for that of EPA, insofar as the substance of the EPA standards is concerned. Under the statutory framework established by Congress at 42 U.S.C. Sections 2022(b) and (d), EPA has been given the primary standard-setting role, while the task of NRC and that of the Agreement States is to implement and enforce EPA's standards, with due regard to special considerations that may be peculiar to particular sites and licensees. Consequently, NRC and the Agreement States have no alternative but to adopt and enforce EPA's standards.

The N.M. EID does not agree that there are serious, unresolved disputes as to the appropriate jurisdictional boundaries between NRC and EPA. This contention appears only to be a tactic to further delay promulgation of final requirements for uranium mill tailings disposal. Congress has taken considerable care to specify the respective roles that NRC and EPA shall play, not only in the original 1978 UMTRCA legislation, but also in subsequent amendments to that legislation. There are in fact very few areas of dispute between NRC and EPA as to how Congress intended to allocate powers and responsibilities between the two agencies. In the few instances where NRC has identified and declined to accept EPA's assertion of authority over certain matters which NRC deems have been reserved to NRC by Congress, the N.M. EID concurs with NRC's interpretation of the statutory allocation of powers between EPA and NRC.

The N.M. EID agrees wholeheartedly with the American Mining Congress that the regulations governing final disposal of uranium mill tailings are of critical importance at this time because most of the domestic uranium industry is shut down. This is especially true in New Mexico where roughly half of this nation's uranium mill tailings are located. Companies are now requesting approval of final reclamation plans, and definitive federal requirements are needed for review and approval of such plans by both Agreement States and the NRC.

Promulgation of final requirements for tailings disposal is also urgently needed to forestall the potential abandonment of tailings sites by licensees. The 1978 UMTRCA legislation placed responsibility for tailings reclamation and control at "active" sites on the licensee. The intended mechanism to ensure proper disposal and reclamation was (1) the adoption by the EPA and NRC/Agreement States of appropriate standards and regulations for disposal, and (2) the requirement by NRC or the Agreement State of adequate financial sureties. The N.M. EID believes that the intended mechanism may fail due to the delays in promulgation of final, definitive federal requirements and the current state of the uranium industry.

Based on recent cost estimates for tailings reclamation and cleanup of contaminated soil and ground water, it is apparent that present financial sureties for many mills are inadequate. As shown in the attached table, financial sureties in New Mexico may amount to as little as 5% of the actual costs for reclamation and clean up to the EPA standards. (Our sureties for 3 tailings sites are 5%-10% of costs projected to be in the $3-$4/ton range.. If we compare the sureties to the costs projected by the Department of Energy after actual experience with reclamation of "inactive" sites under UMTRCA, our sureties are so small as to be insignificant.) Financial sureties in effect for NRC and other Agreement State licensees also appear low, and in some cases may amount to only half the projected cleanup costs based on information recently compiled for Representative Morris Udall by the U. S. General Accounting Office. Financial sureties cannot be increased to amounts adequate to achieve federal standards, until final tailings requirements have been adopted by

NRC or the Agreement State. Because of the requirement for compatibility and the virtual inevitability of litigation by mill licensees, Agreement States can hardly adopt their own conforming regulations until after promulgation of final requirements by the NRC.

The N.M. EID believes that the issue of costs to achieve the EPA standards for tailings disposal should not be considered by the Commission, because the Commission has no legal authority to adopt standards different from those promulgated by the EPA.

The current state of the uranium market in the United States will no doubt affect the ability of some licensees to pay the costs of reclamation and clean-up of their tailings sites. The N.M. EID recognizes that the industry has been placed in an extremely difficult financial position. The requirements for tailings reclamation and clean up are being imposed after the decline of the industry, and are applicable to tailings generated as much as 20-30 years before the federal standards were effective. Some 30% of the tailings at "active" sites nationwide were generated for the Manhattan Engineering District or the Atomic Energy Commission uranium program, without consideration of the costs of tailings reclamation and cleanup. (In New Mexico, as much as 52% of the tailings at one site were generated for the federal government.) The federal government, through its policies on uranium enrichment and imports, also appears partially responsible for the dramatic decline in uranium prices and resultant closure of the domestic uranium mills.

We believe, however, that these financial issues should be separated from the issue of the degree of control necessary for protection of human health and the environment. Bills have been introduced into both the U.S. House of Representatives (H.R. 2236) and the U.S. Senate (S. 1004) to create a federal financing mechanism for "active" tailings reclamation and cleanup. The State of New Mexico strongly supports enactment of this legislation. We hope that the Congress will recognize the federal government's unique responsibility for creation and cleanup of tailings generated in the past, and will enact legislation for financial assistance to address this problem.

In conclusion, we believe that promulgation of definitive federal regulations governing reclamation of "active" uranium mill tailings sites is long overdue. Recent closures of most of the uranium mills in New Mexico and throughout the United States have made it critical that both industry and responsible regulatory agencies know where they stand with respect to reclamation requirements. Financial sureties are also inadequate and must be revised soon after promulgation of the reclamation requirements.

The N.M. EID has previously commented on both the proposed Final Rule published in the November 26, 1984, Federal Register and the ANPR regarding ground water requirements. We have also reviewed the "advanced copy" of the revised Final Rule, which the NRC staff has apparently prepared for the Commission's consideration and adoption. While we might have wished for slightly different responses to our comments than are reflected in the "advanced copy" of the revised Final Rule, the N.M. EID supports the NRC staff's document as being sound, workable, and within the mandate given NRC by Congress. On behalf of the N.M. EID and the State of New Mexico, I respectfully urge that the Commission adopt the staff's draft document in the form of a Final Rule, to be promulgated without further delay.

COMPARISON OF FINANCIAL SURETIES WITH ESTIMATED COSTS TO MEET FEDERAL RECLAMATION STANDARDS

COMPANY	SURETY AMOUNT[A,B]	ESTIMATED COST[C]
QUIVIRA	$8.75 MILLION[A]	$123.75 MILLION
HOMESTAKE	$4.25 MILLION[A]	$ 81.75 MILLION
ANACONDA	$8.62 MILLION[A]	$ 88.5 MILLION
UNITED NUCLEAR	$2.5 MILLION[A]	$ 13.1 MILLION
SOHIO WESTERN	$10.95 MILLION[B]	$ 7.9 MILLION
	$35.1 MILLION	$315 MILLION

[A] BASED ON $25,000/ACRE OF TAILINGS (NM RPR 3-315C).

[B] BASED ON COSTS IN LICENSE APPLICATION.

[C] BASED ON $3.75/TON OF TAILINGS (DOE ESTIMATE FOR NM ACTIVE SITE).

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September 27, 1985

The Honorable Edward J. Markey
U.S. House of Representatives
Washington, D.C. 20515

Dear Congressman Markey:

We understand testimony on the Viability of the Domestic Uranium Industry, :The Uranium Mill Tailings Act of 1985," and DOE's Enrichment Policy will be received at the Energy Conservation and Power Subcommittee of the House Energy and Commerce Committee hearing on October 2, 1985. Therefore, the Wyoming Mining Association wishes to comment on these matters currently before Congress which are of utmost importance to the domestic uranium mining and milling industry.

The Wyoming Mining Association maintains that the U.S. uranium industry is no longer viable. A look at the two largest production states shows that a significant portion of the U.S. uranium industry will not survive without immediate action in Congress. Virtualllly all of the New Mexico uranium mining operations are shut down. In Wyoming, only one uranium company will continue in production after January, 1986, at a much reduced rate. (Nine uranium mills previously operated in Wyoming.) This comes at a time when consumption of uranium by U.S. utilities is at an all time high which is also projected to increase over the next severals years.

The Enactment of "The Uranium Mill Tailings Act of 1985," in substantially the form it was introduced is a fair approach. The reclamation funding proposal per se will provide a measure of relief to the faltering uranium industry.

The Department of Energy is required under Section 161v. of the Atomic Energy Act, to adopt policies which will maintain a viable domestic uranium mining and milling industry. It has failed to do so as a result of enrichment policies. The Wyoming Mining Association Uranium Operators believe that current DOE policies are detrimental to the domestic industry. At a time of low uranium prices and surplus inventory, DOE is selling off the government's uranium stockpile. While many governments of other producing nations own, protect, and subsidize their domestic uranium industry, U.S. producers are struggling to survive.

We are very pleased to hear of your willingness to hold a hearing on these matters. It is extremely important that we maintain a viable domestic uranium industry. A near-total dependence on foreign sources is not an acceptable alternative. Energy independence for the United States should still remain the ultimate goal for this country.

Very truly yours,

William H. Budd

William H. Budd, Jr.
Executive Vice President
Wyoming Mining Association

cc: Senator Malcolm Wallop
Senator Alan Simpson
Congressman Dick Cheney